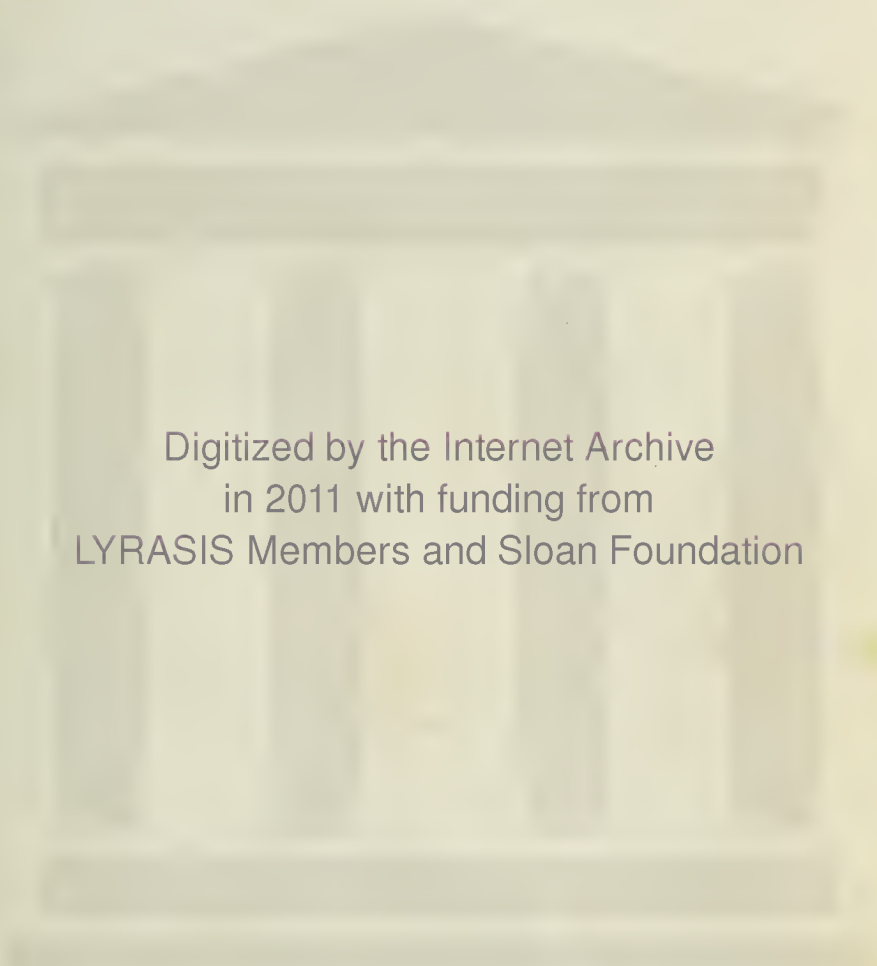


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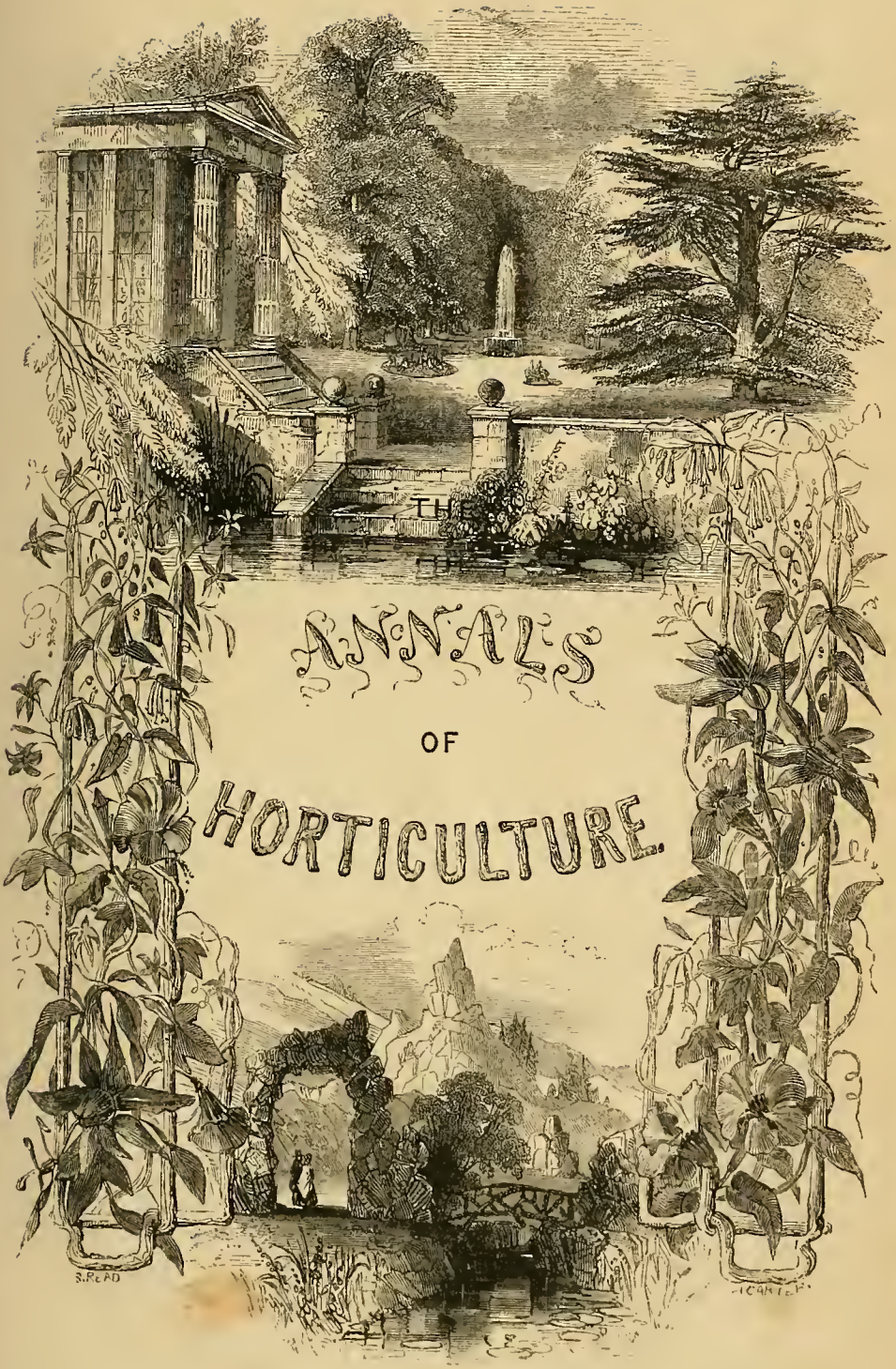


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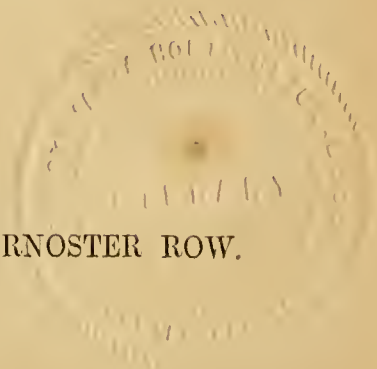
ON

PRACTICAL GARDENING,

FOR 1847.



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1847.



TO

THE RIGHT HONOURABLE

THE EARL OF AUCKLAND

KNIGHT GRAND CROSS OF THE ORDER OF THE BATH

VICE-PRESIDENT OF THE HORTICULTURAL SOCIETY OF LONDON

&c. &c. &c.

THE PROMOTER OF HORTICULTURE IN BRITISH INDIA

AND ITS FRIEND AND PATRON AT HOME

This Volume

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THE EDITOR.



P R E F A C E.

THE success of our Volume published in January last, of which a Second Edition has already been called for, has convinced us that books of useful information complete in themselves, are more popular than the most perfect serials that are in any way dependent on each other. This Miscellany is of the former description. It is the Annals of Horticulture for the past year, a year remarkable for the advance made in the science, and for the introduction of many novelties, of which there is no record so complete as that comprised in the present Volume. It contains many sound Treatises; numerous interesting Notes; a complete system of Gardening for every department of a first-rate establishment; Lists of all the New Flowers, Plants, and Fruits introduced during the year; together with a mass of valuable information suited alike for the Practical Gardener and the Amateur. It is scarcely necessary to particularize where every page is useful; suffice therefore to say, that the contents of the Work are such as to meet the wants and wishes of every class of Gardeners, from the humble cultivator of Pinks and Polyanthuses in a ten-rod allotment, to the Royal owner of Frogmore.

As mentioned in our former Preface, "It is intended that one volume, similar to the present, shall be completed annually, embracing a perfect History of Gardening for the year, and a description of every flower, plant, fruit, and vegetable that is introduced during the period. With this view, the many novelties produced from time to time will be carefully recorded, and all that is new, useful, and interesting, will be published, as heretofore, in monthly parts, as the 'Horticultural Magazine,' and in due time form the 'Annals of Horticulture' for the year."

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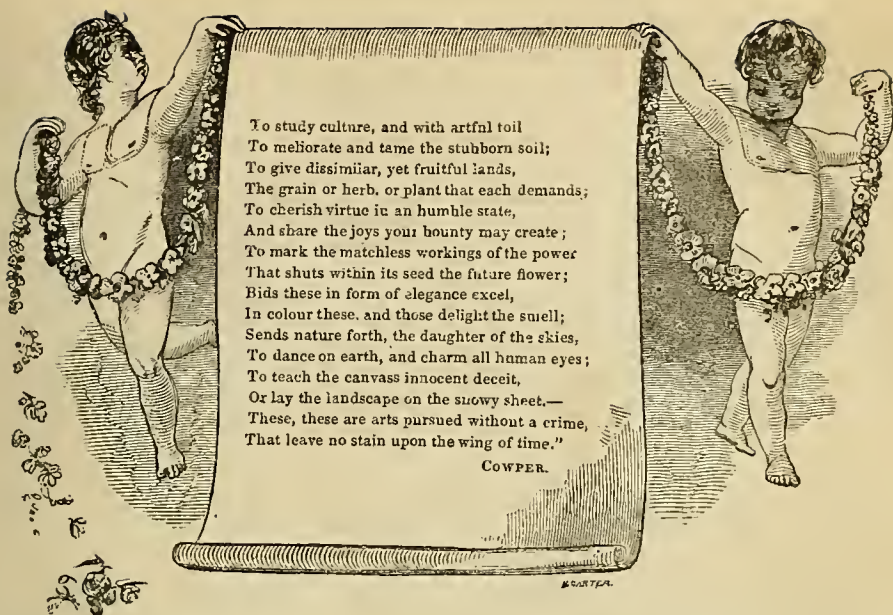
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To study culture, and with artful toil
 To meliorate and tame the stubborn soil;
 To give dissimilar, yet fruitful lands,
 The grain or herb, or plant that each demands;
 To cherish virtue in an humble state,
 And share the joys your bounty may create;
 To mark the matchless workings of the power
 That shuts within its seed the future flower;
 Bids these in form of elegance excel,
 In colour these, and those delight the smell;
 Sends nature forth, the daughter of the skies,
 To dance on earth, and charm all human eyes;
 To teach the canvass innocent deceit,
 Or lay the landscape on the snowy sheet.—
 These, these are arts pursued without a crime,
 That leave no stain upon the wing of time."

COWPER.

HORTICULTURAL PURSUITS;

THEIR IMPORTANCE AND ADVANTAGES.

COWPER must have been a gardener; none but a Horticulturist at heart could have conceived the beautiful ideas which are breathed in every sentence of the above quotation. No one who had not experienced the calm delight arising from the contemplation of his plot of ground, could have so happily enforced the advantages of cultivating the soil, nor have given so comprehensive a lesson in so few and such pleasing words. They form a text from which a divine might preach a lengthy sermon, or on which a lecturer might dilate for hours. The advantages of study, the practical preparation of the ground for its work, the proper choice of subjects for the situations and soil, the duty of cherishing industry among the working classes, and affording them the means of enjoying their recreative labour, are all plainly and prettily laid before us in the most inviting form. Who can read these few lines without comprehending in the picture the whole system of allotment and cottage gardening? And what is more charming to the prince and the peasant than a well kept parterre; what more lovely to the eye and fragrant to the sense than the flowers with which it is bespangled? In the very depth of winter a few sunny days bring out some straggling beauty to aid the more staple occupant of the season. The laurustinus, which begins to open its snowy bunches even before Christmas, seems to invite all other beauties to follow his example. The Christmas rose at his feet rivals him in whiteness, and seems to say he

shall not bloom alone; while the coral and golden berries of the holly shine above and brighten the scene. January scarcely passes, unless in very dreary seasons, without opening some truant wall-flower or primrose before its time. February adds snow-drops, daffodils, polyanthus, primroses, and crocuses, all of which become plentiful in March; and April brings forth the auricula, the hyacinth, early tulip, narcissus, jonquil, and crown-imperial, and a bevy of beauties, which vie with each other in brilliance and in fragrance. And now comes May, with her thousand blossoms of all hues and scents. The gaudy tulip now ascends her throne as Queen of May flowers. Anemones and ranunculuses carpet their respective beds with all the colours of the rainbow. June brings forth the rose, which on the dwarf bush, or the stately standard, or covering the front of the cottage, is alike beautiful, and with its humble companion, the pink, sheds its odour in all directions; and thus we might proceed through the whole year, noticing the carnation and picotee, and the thousand summer flowers, which in rapid succession fill up their respective months, until the dahlia, the Michaelmas-daisies, and other autumnal flowers are cut off by the frosts, with which, however, the gay chrysanthemum has a stand-up fight, and to the last braves the worst weather in the borders, as if determined to see all other beauties out. But even now the winter aconite, the autumnal crocus, and the Sternbergia lutea

begin their reign, in purple and yellow grandeur; and scarcely one solitary day in the year is the well-kept garden deserted. If it be not a grateful task to tend all these still more grateful subjects, we hardly know where to seek one. But if the garden yields all these sources of delight in flowers, it is but a tithe of its value, as compared with its fruits and vegetables; and who is there to be found indifferent to the productions he can take from his own cultivated spot? Is there a single vegetable to be purchased, that we eat with the relish that accompanies a dish of one's own growing? What so sweet as peas of one's own gathering, or cabbages of one's own cutting? What fruit so palatable as that from

our own trees? And when all this pleasure can be provided for the humble cottager, how culpable must be the man who neglects any of the means in his power to promote that object? Cowper is right: his words should be printed in letters of gold. They should be familiar as nursery-rhymes; they should be written on the opening page of every school-book; they should be engraven on the memory. If anything can make a man industrious, and contented, and happy, it is a garden; and it cannot be impressed upon his mind too early, that he should teach others, and, so far as he can, enable others, to enjoy that which is so conducive to their welfare, and the moral and social comfort of all around them.

THE KITCHEN GARDEN AND ORCHARD;

THEIR FORMATION AND MANAGEMENT.

THE principal considerations in the formation of a Kitchen Garden, are situation, enclosure, drainage, preparation of the soil, and disposition of the surface; and whether the area be large or small, these particulars will equally require attention.

Situation.—The very best situation and aspect for a kitchen garden, is one moderately elevated, and sheltered on the north and east by *distant*, not *contiguous* trees. No place is better suited for the purpose than the slope of a hill facing the south-west, backed on the north by thick plantations at a moderate distance, and sheltered on the east by less dense and more distant belts of trees. When such a situation cannot be obtained, the nearer it can be approached the better.

The nature of the soil is a matter of less importance than situation, because, whatever its nature may be, if there is a sufficient bulk of it resting on the subsoil, it may be altered and improved. What is called a deep free loam is the most suitable for all kinds of crops, and the nearer that inferior soils can be made to assimilate to that, the better. Generally, heavy soils are preferable to light ones, that is to say, clay soils are better than those of a sandy nature, as being of a more holding character, and thus capable of sustaining better crops; but they involve a greater amount of labour in their complete amelioration.

Enclosure.—All gardens should be enclosed by durable fences, as these not only afford shelter from the winds, but they are also valuable as a means of assisting in bringing to maturity the many choice fruits which a garden should contain. For this latter purpose, nothing is so good as a brick wall; and where the situation and the space admit, it should

be placed a short distance within the boundary, so that both sides may be available for the training of fruit trees; the outer boundary may then consist of a compact hedge or wooden fence, or both conjointly. The slip of ground on the outer side of the wall may be thirty feet wide or more, and will be useful for vegetable crops, the varieties of aspect being turned to account in keeping up a succession. The height of the wall will of course have to be regulated by circumstances, and should bear some proportion to the size of the enclosed space, as a very high wall should not be built around a small area: whatever height in connexion with the situation may be judged most proper, the training of the fruit trees must be adapted to it. From ten to twelve feet is a usual and convenient height if the area is considerable, and this is little enough for most kinds of fruit trees. The highest portion of the wall should be across the north side of the ground, first, because it forms a protection from the north winds; and, secondly, because it presents a greater surface to the southern aspect, which is so very desirable for peaches, nectarines, and other choice fruits; this part is the better, if as much as fifteen feet in height. The thickness of the walls will be variable, according to their height, and the degree of exposure to which they are subjected. The walls should be built parallel with the surface, and not necessarily upon a true level; if the surface does not incline too much, they are best when parallel to it. Whether or not the space to be enclosed is of even outline, the walls should be built in straight portions. Various contrivances have been recommended with the view of affording additional shelter to the trees, such as building the

walls in an undulating form, and with square recesses, and again with angular projections, but there is no advantage resulting from these fancies. Sometimes, where the refinements of gardening are carried to a great height, the walls are provided with flues, for the purpose of warming them; these flued walls seem originally to have been intended for accelerating the trees in the spring, but for this purpose they are worse than useless, as they only excite them into growth to be cut off by the spring frosts. In our cold and variable climate, such walls are sometimes useful in the case of the more tender fruits, in assisting to ripen the young wood towards the end of summer, which the coldness and dampness of autumn often militates against: this is, however, as before remarked, one of the refinements of gardening, and is, besides, somewhat expensive.

If walls are not erected, the best substitute is a stout close wooden fence, as high as circumstances will admit. This will also serve as a shelter for fruit trees, but is inferior to a wall, as the wood does not absorb heat like bricks, and, consequently, its surface not retaining heat like that of the wall, has less influence on the growth of the tree: it, however, secures to the trees all the advantages of shelter. Where gardens are surrounded only by hedges, or low open wood fences, the more tender fruits must be dispensed with.

Drainage.—A garden should be well drained; and as luxuriant crops of well-flavoured vegetables can only be secured by a system of deep cultivation, so it is necessary that an approach at least to what is called deep drainage should be adopted. The main or conducting drains should seldom be less than five feet deep, and the smaller or collecting drains ought to be three or four feet deep, the deeper of the two being proper for heavy soils, and the shallower for gravelly ones. If the garden is small, one main drain along the centre will be enough, but where the area is considerable there should be two or three of these. A proper and convenient outlet must be selected, and this will usually be found at the lowest point: if the ground is sloping, this will seldom present any difficulty, but in cases where the ground is level or nearly so, it will be necessary to contrive the drains so that there may be a sufficient fall to carry off the the water. The smaller drains should gradually slope or fall into the larger ones. Tile drains are preferable to any others, being more durable. The distance between the smaller drains will depend on the nature of the soil and subsoil; if the latter is clay, they will require to be nearer in proportion, clay being retentive of moisture; but if sand or gravel, they may be much farther apart. In ordinary

clay soils it is desirable to place them at fifteen or twenty feet apart, while in more porous soils they may be as much as thirty feet asunder. In draining a garden, however, it should never be forgotten, that it is best to err on the side of providing efficient drainage, for there is nothing more certain than that a badly drained garden will be an unfruitful one. Besides this regular series of drains all over the garden, a drain should run along the bottom of the whole of the gravel walks, communicating at proper and convenient places with the main drains. If it be a walled garden, and borders for fruit trees are to be formed, these too must have a proper series of drains, also connected with the main or conducting drains.

Preparation of the Soil.—When the drainage is completed, the next thing is to prepare the soil, in the first instance, for the reception of crops. The details of this operation will be various according to the nature of the original soil. If it be a free deep loam, it will require no other preparation than a deep and regular trenching, which should be alike performed over the whole area. Trenching will also be necessary whatever the natural soil may be, but according to its nature various additions or reductions will have to take place. Thus, if the soil be close and adhesive, consisting in great part of clay, it will be proper to remove some of the most stubborn of this clay, and replace it by coarse sandy soil, charred clay soil, or indeed any materials of a porous nature; a mixture of such materials may be used, as for instance fine coal ashes, small charcoal, road sand, (if silicious,) or burnt earth or refuse of any kind. Where the soil is a less stubborn kind of clay, a good dressing of sandy loam or any sandy earth will modify it so as to render it suitable for the crops. The quantity of materials to be added to the original soil must depend on the degree of modification required, or the quantity of material within reach; if the latter be abundant, and the soil requires a good deal of alteration, from six inches to a foot in thickness may be used, either removing or not, as may seem best, the same or a less amount of the clay. It is seldom that the thorough modification of unsuitable soils can be effected at once; it is a work of gradual improvement, every opportunity of aiding which should be turned to account. Even stubborn soils become a good deal modified simply by the operations of culture, if properly performed; the trenching of the soil frequently, and the exposing of the surface in ridges to the action of frost, wind, rain and sun, at different seasons of the year, when opportunity offers, are especially efficacious; and besides this, the frequent practice of hoeing deeply during

summer, and occasionally of lightly forking up the surface, materially assist in the process of amelioration. Such soils, that is, heavy soils, should never be allowed to get at all consolidated for want of trenching, forking up, and deep hoeing; and another very essential point is to avoid trampling on the ground, or working it, when in a wet and adhesive state. Whenever the surface of the soil is wet enough to become pasty by trampling on it, digging and trenching, and other operations connected with its improvement, should be postponed; for if, while in this state, the earth is turned over, and the pasty surface placed underneath, or if any of these operations are then continued, any previous advance that may have been made towards improvement will be set aside, and the condition of the soil rendered equally bad as at first. The addition of manure, too, assists greatly in improving the mechanical texture of heavy soils, but for this purpose it should be applied in a long littery state, and before it is too much decayed. Deep draining, trenching, the addition of porous materials, and the proper application of the various operations of culture above mentioned, will, in a short time, complete the amelioration and improvement of the most stubborn soils; and such soils when so improved will be found to produce excellent culinary crops.

The improvement of sandy soils is a very different matter, as regards the details; for though, in their case, thorough drainage and deep trenching are indispensable, yet instead of adding porous materials, those of an adhesive quality are required. Neither do any injurious results follow from operating on soils of this class when in a wet state, or rather soon after they have been wetted, for the ready passage they afford for the water soon renders them comparatively dry. To improve the texture of such soils, what is known as stiff or heavy loam, and marl, should be applied, and in quantity just proportioned to the degree of sandiness of the original soil. To such soils, long littery dung should never be applied, as it would tend only to make them still more porous, from which cause they are at all times liable to suffer during the hot dry weather of summer. They are much benefited in summer, during continuous drought, by the occasional use of various saline manures, diluted and applied in a liquid state, for these have a material influence in keeping them in a moistened condition. It will thus be seen, that the improvement both of heavy and light soils for gardening purposes, consists in assimilating them as near as possible to the free open loamy soils, already stated to be the best natural soils for the purpose.

Disposition of the surface.—The more simple

the arrangement of a kitchen garden, the more convenient will it be found in the subsequent cropping of the ground. The exact disposition of the surface, that is, the position and number of walks, borders, vegetable quarters, &c. must depend on the form and size of the area. If it be a square or a parallelogram, (the two most convenient forms,) a walk should extend round it at a distance from the wall, proportionate to the size of the garden; and if the garden be of considerable size, another should lead through the centre, and may be once or twice intersected, if the space is extensive enough to render these means of communication necessary. The borders next the fence extending all round, should be at least as wide as the height of the fence, or they may be wider; thus, if the wall is ten feet high, the border may be twelve or fifteen feet wide; and even if the fence be a low one, it should not, if there is space, be less than from six to ten feet wide. These borders according to their aspect are exceedingly convenient for accelerating or retarding particular crops. The walks should never be less than three feet wide in small gardens, and are better six or eight feet wide, if there is room.

The border all round next the fence, and the walk next to it, being set off, the size of the central portion of the garden must determine the necessity of having a central walk. If, after the central walk is set out, there would remain about forty feet in width on each side between it and the boundary walk already spoken of, it would be convenient to have one formed; but if the space would be much less than this, it would not be necessary on the ground of convenience, and would only be wasting some of the best part of the ground. This, therefore, it will be seen, is a mere point of taste and convenience; but generally it will be found that a central walk is not necessary.

The area of a kitchen garden thus becomes divided into four parts:—the wall border, the gravel walks, the vegetable quarters, and the narrow borders between these and the walks. The wall borders should slope slightly towards the walk, from what is to be the ground level at the base of the wall; they should never be occupied with heavy or deeply-rooting crops, that draw much nourishment, as this would impoverish the roots of the fruit trees, which are frequently the most valuable part of the garden stock. It is not desirable to dig very deeply, for fear of injuring the roots of the trees; and whatever crops are planted, should be placed at more than the ordinary distance apart, so that they may not shade the ground too much. A slip of a foot wide, next the wall, forms a capital situation for planting a row of cauliflower plants for preservation through the winter, and a row of lettuce plants in front

of them; the former are removed to be planted out in spring; the latter being a light crop may be allowed to grow. Next to this, a clear space should be reserved as an alley or pathway, which is necessary in order to carrying on the management of the trees; this should be at least two feet wide. The gravel walks should be edged with dwarf box, and should be nearly level—a little raised or rounded in the centre, but not too much, as very much rounded walks are unnecessary, and inconvenient to walk on. If box edging is objected to, as it is by some, on the ground of harbouring slugs and snails, (an objection, by the way, which has little force, if the edgings are, as they ought to be, kept neatly trimmed,) wood, brick, stone, slate, or glass edgings may be substituted. The border on the opposite side of the walk from the wall, may be narrow,—from three to five feet is sufficient; it is useful for many purposes, such as raising salads, planting herbs, sowing seeds for transplanting, &c., or it may be filled in rotation with such crops as strawberries. Between this border and the vegetable quarters, a row of fruit trees is usually planted; this may be a row of gooseberries and currants, of raspberries, of dwarf apple and pear trees; or apples, pears, and plums trained as espaliers; or, as we prefer, dwarf standard pears and apples trained in the balloon fashion, alternating with gooseberry and currant bushes. The latter two may be trained as dwarf standard trees, and are thus not only better preserved from the splashing of heavy rains, but are more easily covered up for preservation from birds, as is desirable with a portion of the crop; indeed some, of the currants especially, if well matted up, may be kept till Christmas in favourable seasons. The vegetable quarters within the row of fruit trees, should have a narrow pathway or alley all round for the convenience of workmen, and for getting from one crop to another. Temporary alleys for the same purpose may also be formed between the crops at the time of planting them.

To be complete, every garden should have a supply of water available for the plants, without the labour of watering; this is to be effected by having an elevated reservoir constantly supplied, and attached pipes leading round the walls, and provided with the necessary stopcocks. A leathern hose, and the labour of a man to direct it, is then all that is required for watering the crops.

HOT-BED DEPARTMENT.

Few, if any, gardens can be managed without hot-beds, and where hot-beds are employed, a special situation should be devoted to them, for at best they have a littery and unsightly

appearance, which makes it extremely undesirable that they should be made openly in the kitchen garden. When a separate fenced-off department is devoted to them, their unsightliness becomes of little importance, while all their advantages are better secured, and the management of them is rendered more convenient.

Such a department as is here alluded to is commonly called the frame ground. Its extent will be regulated by the amount of business required to be carried on in it; but it is well to provide space enough, for many untidy operations may be carried on here better than in any other place, and with less disturbance to the order of the garden. It is convenient to have the frame ground near the potting sheds and yard; in fact, it may form part of the latter. A warm sheltered situation should be selected, open to the sun on the south and east, and entirely without shade at these points, but well protected on the north and west, as well as on the north-east. The space should be well drained, and made dry and firm for walking on. Excavations from a foot to eighteen inches deep should be made to build the beds in; by this means the drainage from them may be more easily collected, and they are, besides, less exposed to the influence of winds, which have much effect on hot-beds, causing the heat to fluctuate often to a very great extent. These excavations should range in regular order from east to west, so that the beds may face the south, (or north if a shady bed is required). They should be about three feet wider than the hot-bed is required to be built, which will leave eighteen inches at front and back as a base for the linings or casings of hot dung which have to be applied subsequently to maintain a proper heat. The width of the bed should be just a few inches wider than the frames; that is, as nearly the size of the frame as will admit of the latter standing quite firmly on it. Garden frames are usually made about five feet wide, so that the excavation should be about eight feet in width; the edge of this should be formed of stout plank, kept in place by short piles driven into the ground, the upper edge being level with the walk; the bottom should be drained and made to slope to the centre, and also slightly towards one end, at which a cesspool should be formed to receive all the drainings of the dung, which may be turned to account as liquid manure. The space between the excavations may be two feet wide, quite level and firm. Where dung pits are used instead of hot-beds, they should be built in excavations of the kind here explained, for the same reasons; but where hot-water pits are substituted for them, they may be built on level ground. The highest beds or pits should be placed at the

north side of the ground, so as not to shade any of the others.

THE ORCHARD.

There is so little difference in the conditions necessary to form a good orchard and a good kitchen garden, that what has been said with reference to aspect, soil, and preparation, in the one case, is also applicable in the other. An orchard may be enclosed by a wall or other substantial fence suitable for training the tenderer kinds of fruit against, but it is more usually enclosed by a low fence and hedge, the walls of the kitchen garden affording in most cases what is regarded as sufficient accommodation for the finer kinds of fruit. The question is simply one of expense. When the cost of building a wall, and of preparing for and properly looking after the trees, is not an objection, such an arrangement would be in perfect accordance with the objects of an orchard. In this case, however, the smaller kinds and the dwarf trees only should be planted nearest to the wall, in order that the latter may not be shaded; neither should any be planted within the distance of an ordinary fruit-tree border.

Low, damp, or what are called early situations, are very unsuitable for orchards. Each of these favour early growth in spring; and it is the early development of the blossoms while they are still liable to suffer from severe "spring frosts," and are unprotected by foliage, in which lies the greatest risk of losing the fruit crop. An elevated and comparatively backward situation is therefore an essential condition of success.

Wherever standard fruit trees are grown, an orchard of greater or less extent ought to be provided for them, for nothing is worse than to have such trees growing in the vegetable garden among the culinary crops; it prevents either the one or the other from attaining their proper perfection, the vegetables being injured by the continual shade of the fruit trees, and the latter suffering both from the repeated diggings which are required, and also from the amount of manure which is necessarily applied to the former. The orchard may advantageously be situated near the kitchen garden, and if it can conveniently be placed on the exposed side, it may serve as a means of shelter.

Another general consideration is this:—Few soils are adapted to grow every kind of fruit to perfection, and the wholesale renewal of the soil to render it adapted for each kind of tree is too expensive an operation. All that can be done is to approximate as nearly as possible to what would be desirable in this respect by partial renovation, and to plant chiefly of those kinds of fruit for which the

soil is most suitable, and limit the number of those for which it is not adapted.

The trees in an orchard should be planted in quincunx order; that is, they should stand in lines, the plants in one line alternating laterally with those in the next line, or standing opposite those in the second line, thus:—



This arrangement, while it occupies the ground to the best advantage, also secures the largest possible space on all sides for each individual plant. In fact, this is the principle on which all crops, whether of vegetables or fruit, should be planted. The trees must not be indiscriminately mixed; it is better to select the strongest growing kinds of trees, and have these planted together at greater distances apart, the smaller growing kinds being also planted together, and, if required, somewhat closer than the others. The larger growing trees should not be planted at less than forty feet apart, and the smaller ones in proportion. Where there is space, however, it will be better to plant them at greater distances, in order to secure a free circulation of air on all sides of the trees. They ought at all times to stand quite clear of each other, so as not to be in any degree crowded or materially shaded.

Fruit trees are some years arriving at perfection, and, consequently, it is very important that not only should a good selection of kinds be made and planted, but also that these should be obtained quite true to name. Too little attention is paid to this matter in many nursery gardens, and grievous have been the disappointments of detecting spurious fruits after several years of anxious cultivation. Hence it is infinitely better, though at a higher cost, to ensure, as far as possible, that the kind selected are true to their names. It is by no means desirable to very much extend the number of varieties to be planted; a good and limited selection adapted to furnish a proper succession from the extreme beginning to the end of the season being more advantageous in every respect than the mere possession of a very extensive collection of varieties. When, however, many kinds are required to be cultivated as a fancy, several may be grafted together on one tree; in this way they will succeed well enough, if those of similar habits are placed together. Where it is found that spurious varieties have been planted, it is better to change them by grafting or budding the growing trees, rather than to have recourse to replanting.



THE KITCHEN GARDEN.

Sow artichokes, basil, beans, cabbages, carrots, cauliflower, lettuces, marjoram, onions, parsley, peas, radishes, salading, and spinach.

Plant and Transplant artichokes, cabbages, horse-radish, shallots, and potatoes.

General Directions.—This is a proper time to improve light and heavy soils, by mixing the former with that of an adhesive nature, and the latter with sand or lime rubbish. Trench, dig, and in frosty weather do all necessary wheeling. Collect into heaps all the vegetable refuse to make manure, sprinkling the heap with a little salt, or lime, to assist decomposition, and to destroy the larva of insects. Turn gravel walks, and plant box-edgings; prepare stakes and labels; destroy vermin, such as mice. Stir the soil between crops, in dry weather, and draw a portion of fine earth about the stems of the advancing crops.

Artichokes (Globe).—Sow on a slight heat, about the end of the month, and forward by pricking them into boxes or pots. These will come into use late in autumn; protect the old plants.

Artichokes (Jerusalem).—Plant any time during the month, on deeply dug and richly manured soil; put them five inches deep, and eighteen inches apart, in rows three feet or more from each other.

Basil.—Sow a little in a hot-bed frame, towards the end of the month.

Beans.—Plant a small quantity towards the end of the month: select a dry and warm spot, putting them in rows two feet between, and three inches apart: either the Mazagan or Marshall's Prolific will suit.

Brocoli.—Look over the stock, and protect those which are showing flower, by breaking a few of the inner leaves down upon the heads before they are far advanced.

Brussels Sprouts.—Support the tall plants with stakes, and let the sprouts be picked carefully, as wanted.

Cabbage.—Plant from those pricked out, in autumn; sow also a few for succession.

Carrots.—Sow a few for early use in a slight hot-bed, or on a sunny spot, hooped over, so as to be covered with mats in severe weather. Look over those which are stored, and pick out any which are beginning to decay.

Cauliflowers.—Shift those in pots; give plenty of air to all that are under glass; clean and stir up the soil; make a sowing on a slight hot-bed, at the end of the month; and in severe weather give extra coverings.

Celery.—The late plantings may be again earthed up in mild weather, and the whole must be covered with litter when the weather is severe.

Endive.—Look over all that is kept in frames and cellars: pick off decaying leaves; give no water, but plenty of air, and keep them as dry as possible.

Garlic.—Plant out now, if not already done, in rows fifteen inches between, and six inches apart in the row; shallow drills may be drawn for them, but they must not be covered, only pressed on the soil.

Herbs.—The perennial sorts, such as mint, thyme, balm, tarragon, &c., may be increased by division if required.

Horse-radish.—Make new plantations; in doing this, trench the soil three spits deep, put plenty of manure at the bottom, plant cuttings of the roots eighteen inches deep, in rows two feet apart, and nine inches in the row: this is better than making holes.

Lettuces.—Sow a few, by the end of the month, on a warm border, or on gentle heat. Those in frames and hand lights, or by the side of the wall, require looking to; have the dead leaves picked off, and the soil freshened; in mild weather give air plentifully.

Mint.—Plant some roots in pots or boxes, and set them in a forcing-house or hot-bed frame, where the heat is moderate.

Onions.—Sow a few on a very warm spot; clean the autumn sown crops. Plant out some of the small roots, such as are used for pickling, they will be found very useful; put them about five inches between, and the rows one foot apart. Look over those which are stored; clean them thoroughly, and in doing so handle them very gently.

Parsnips.—Prepare to sow early; deeply dig or trench the ground; attend to those stored in the autumn.

Parsley.—This is a considerable time in vegetating; if the ground is dry it should be sown now, in rows fifteen inches apart, or along the edges of the alleys. Take up a few of the best roots, and plant them in a frame near the glass, as provision for severe weather.

Peas.—Sow a crop of the Early frame at the beginning and end of the month, on a dry border, in rows a yard apart; or, what is better, along the bottom of the wall. To saturate them before sowing with bitter aloes, is said to be a complete preventive against the attacks of mice. Protect the autumn sown crop by close twiggy stakes.

Potatoes.—Keep those which are stored thin and cool, and pick out any diseased ones. Plant out some of the early sorts (the late ones may also be tried,) on a dry and sheltered spot, using whole potatoes for sets; put them in rows two feet between, and one foot in the row, and instead of dung, use leaf mould, and charred earth, or refuse.

Radishes.—Sow a few on a warm border, protected by mats, loose litter, or other light material: well air those in frames.

Salading.—Sow a little towards the end of the month, as mustard and cress, on a warm

sheltered spot; protect it from the wet and severe cold.

*Savoy*s.—Preserve any that come very good, and plant them in a warm place, for a supply of seed.

Spinach.—If much in demand, sow a little on a warm sheltered border, to come in succession; stir the soil, when dry, between the advancing crop, and keep it clear of weeds; when picking it for use, gather only the full grown leaves.

Winter Crops.—Keep them clean by removing all the decaying leaves, &c. If any of the sorts are proving themselves to be true, and coming very good, it will be well to plant out a few of the best for seeding.

THE FRUIT GARDEN.

General Directions.—Collect all prunings, &c., and have them charred for manure. Fork up those places where the soil has been trodden down whilst pruning and nailing. Trench and drain the ground where young trees are to be planted, and in all cases avoid deep planting; as a general rule it is better to plant without making any pit, but to spread the roots over the surface, and cover them with fresh soil. It is a good plan, previously to nailing the peach and other fruit trees, slightly to paint the walls with a liquid mixture of lime and sulphur in equal proportions; soap suds and urine will be good additions to the composition. A similar mixture applied in a weak state to trees which are mossy and dirty will serve to cleanse them. Lay in a store of stringed and other labels for use at grafting time, &c.; clean old nails by shaking them briskly in a bag of sand, and always heat them and dip them in oil before using; prepare shreds; and the fewer nails and shreds used in nailing the better. Have the necessary protecting materials for the early blooming kinds in readiness.

Almonds.—Finish pruning and nailing; the buds may be thinned at the end of the month with advantage: keep the standards thin of wood in the centre, and regularly formed.

Apples.—Get on with the pruning, tying, nailing, and planting; avoid planting deep; and stake and mulch those already transplanted.

Apricots.—Prepare protecting materials, as netting, matting, &c., to be applied when the blossom is about to open; finish pruning, nailing, and planting.

Berberries.—If the fruit is much used, plant a few in a deep and rich soil; they are very ornamental in shrubberies, whence the fruit may be gathered.

Cherries.—Finish pruning and nailing immediately those on walls, &c. The Morello

may be left until the last, as it is very late ; protect all in blossom.

Chestnuts.—If introduced at all, they must be planted around the outskirts, where they will serve for shelter.

Currants.—Propagate all the best sorts ; make new plantations when required ; finish pruning ; and, when digging, add a portion of well decomposed manure.

Filberts.—Finish pruning ; form them into open bushes, as practised with the currants : the trees may be cup-shaped.

Figs.—It is presumed these are well covered ; more covering may be added if the weather is severe.

Gooseberries.—Complete the new plantations, and finish pruning ; break off (not cut) the suckers ; have the ground dug and manured ; put in cuttings of the best sorts, a foot in length, and insert two-thirds in the soil, leaving only three eyes at the top, all the rest being cut away.

Grafts.—Those which had to be taken off early, or have been procured, may be preserved fresh by thrusting them half-way in damp sand or soil, or into a potato.

Medlars.—Thin out the irregular branches of established trees, keeping them open in the centre, to admit light and air.

Mulberries.—Prune so as to leave the centre open, without crowded or crossing branches.

Nectarines.—Prune, nail, and thin the buds towards the middle and end of the month ; prepare to protect the blossom. It is a good plan to use a board, to project at the top nine inches, to which the awning may be attached.

Peaches.—If the buds swell fast finish the pruning, thinning of buds, and nailing, early ; prepare materials, as netting, and have a board along the top of the wall to ward off more effectually the frost and wet, to protect them when in blossom.

Pears.—These may be planted ; prune and train those on walls or espaliers ; stake and mulch those recently transplanted. Young trees must be cut sparingly, as it induces too vigorous growth. Several of the French sorts bear best on the young wood, and may be treated accordingly. Keep the standards well thinned of wood.

Plums.—Prune and train, laying in a moderate quantity of young wood, the fruit being better thereon than on spurs.

Quince.—These may be now planted. It is usual to graft pears upon the quince stock ; and it is desirable to have a few thus done, as they come earlier.

Raspberries.—Make new plantations ; prune, tie, and dig the old plantations, adding a portion of manure ; dig out all the suckers not required.

Stocks for grafting upon should be propagated by layers, seeds, and root cuttings ; those from root-cuttings and seeds are preferred : root cuttings are best.

Vines may be planted ; prune and train as soon as possible ; this, in some degree, will prevent bleeding.

THE FORCING GARDEN.

General Directions.—In watering, always use rain water warmed to the temperature in which the plants are growing ; this can be done by keeping the engine and watering cans filled over night, or by mixing with warm water. When giving air, avoid causing currents, and only admit it by the top ventilators, and that early in the day ; shut up early, so as to have the house warmed as much as possible by sun heat ; it will be all the better if the thermometer rise a few degrees after the air is taken off ; these instruments should be used in every department, although the experienced can do without them. In dull and severe weather it is sometimes necessary to make fires during the day, when a little air may be given. It is not advisable, when the weather is extremely cold at night, to keep up the exact heat required, as a few degrees lower will do ; but it must be kept nearly right during the day, particularly when the plants are in blossom. Give all the houses a thorough cleaning before forcing is commenced. All forcing-houses and pits should be covered at night, to economize fire heat, excess of which is both expensive and hurtful.

Asparagus.—Temperature, 55 degrees by day, 50 degrees at night. Take every advantage of sun heat ; give a little air daily ; shut up early ; and water with tepid water, a little salted : prepare a succession bed.

Cherries.—Temperature, from 45 to 50 degrees by day, 40 degrees at night. Admit air freely until the trees come into blossom ; great caution is then necessary. Keep the atmosphere steady and moist ; use little fire heat at night, but apply it during the day in dull weather, always giving a little air at the same time.

Cucumbers.—Temperature, 70 degrees by day, 65 degrees at night. Those in houses should be syringed freely with clear soot and manure water. Train always on a trellis, and stop at every joint when established ; see that the steam of dung linings does not enter the frames ; cover carefully at night.

Figs.—Temperature, 50 degrees by day, 45 degrees at night. Syringe often ; use tepid liquid manure when they are growing fast. Those in pots should be brought on gradually, and can be ripened in the stove or vinery.

Kidney Beans.—Temperature, 60 degrees by day, 55 degrees at night. Sow either in a box

or pots, to be transplanted, as soon as vegetated, into four-inch pots, and again shifted into eight-inch pots, placing four plants in each: place them near the glass, say in the peach house, or vinery, upon shelves.

Melons.—Temperature, 60 degrees at night, 75 degrees by day. Sow a few seeds; pot off those for planting out next month, one plant in a pot, and stop it at the showing of the third leaf. They can be planted out, or kept in pots, and grown as vines: in this case, allow them to run a little before stopping them.

Mushrooms.—Temperature, 55 degrees, chiefly raised from the fermenting dung being prepared in the house, for the succession beds. In watering, use tepid water, and apply it very moderately: exhausted beds may be partly renewed by applying liquid manure.

Musas.—Temperature, 60 to 70 degrees by day, 55 degrees at night. Keep the atmosphere moist, and water with liquid manure at the roots.

Nectarines.—Temperature, 55 to 60 degrees by day, 40 degrees at night. Stir the soil of the house, and keep the air sweet by waterings; thin the blossom buds, and shake the trees when in blossom, to assist impregnation; give air freely when mild, and close early in the afternoon.

Oranges.—Temperature, 45 to 50 degrees by day, 40 degrees at night. Water and syringe moderately, and in the mornings. Those in pots infested with worms should be watered with lime water.

Peaches.—Temperature, 55 to 60 degrees by day, 40 to 45 degrees at night. Syringe freely in the forenoon, until the blossoms open, when it must be entirely withheld; shake the trees to disperse the pollen; freshen the soil, and maintain a moist atmosphere; air freely when mild; always shut up with sun heat, if possible.

Pine-Apples.—Temperature, 70 degrees by day, 60 degrees at night. Increase the heat around the fruiting plants, say to a bottom heat of 95 degrees; water once a week or so; keep the house moist; air, if mild, every day; shut up early, and in severe weather keep the fires on during the day.

Rhubarb.—Place some roots in the mushroom house, where it will come blanched; or cover the crowns with boxes or pots, in the open ground, and surround them with fermenting materials: the heat should not exceed 65 degrees.

Salading.—Sow in boxes, and keep near the light: any of the forcing houses will suit it; old tan much decayed will be found excellent for growing it.

Sea Kale.—Cover up in succession with a mixture of leaves and dung, to the depth of nine inches or a foot; if the crowns are covered with pots or boxes it is necessary to build the material over them; the heat should

be mild and regular, about 50 degrees. A slight covering may be put all over the bed.

Strawberries.—Temperature, 55 degrees by day, 45 and 50 degrees at night. These require plenty of air when in blossom, and copious waterings when the fruit is set; keep the plants near the glass, in a moist heat; either the pinery, vinery, peach-house, or hot-pits will suit them.

Steaming.—This practice is not commendable, being quite unnatural; it is better to keep every part of the house moist, which produces a sweet atmosphere.

Vinery.—Temperature, 50 to 60 degrees by day, 45 degrees at night. Syringe very freely until the vines are in leaf, then increase the heat gradually to 60 degrees, and when in blossom from 70 to 80 degrees by day, and 60 degrees at night. Apply fires during the day, protect the borders outside from wet, and have the stems which are exposed protected.

FLOWER GARDEN AND SHRUBBERY.

Sow hardy annuals in mild and dry weather, in the open ground and in frames; also hardy biennials and perennials.

Plant and transplant herbaceous plants, trees, and shrubs of all kinds, if the weather is dry, mild, and open.

General Directions.—Proceed actively with alterations, and have the flower borders and shrubberies dug; the surface should be left rather rough, excepting about the plants and edging; all the necessary wheeling of soil, manure, &c. should be done in frosty or dry weather. Trees and shrubs may be pruned at all times and seasons; but the present is especially suitable. Let all the work be done neatly and tastefully.

Slugs are very injurious to many flowers, as polyantheses, alstroemerias, &c.; they should be destroyed by laying down handfuls of fresh brewers' grains in the evening, and sprinkling them with hot lime some time after, in the same night.

Alpine Plants.—Wherever the soil about the roots has been displaced by wet or frost, add fresh mould, or replant if necessary.

Anemones.—Plant for late blooming in well drained beds in a soil of loam and cow dung, at a depth of two inches, and six inches apart.

Annuals.—Protect the autumn sown ones, in very severe weather, by inverted flower pots; keep those in frames well aired, so as to have them hardy, and in a fit state to plant out early.

Auriculas.—Water very sparingly, and give air freely in fine weather; remove dead leaves, and top dress with a rich soil; protect from frost by covering with mats, &c. These plants require a dry bottomed frame.

Berberis (Berberry).—Remove the suckers, and plant them in nursery rows for stock.

Bulbs.—Those that remain unplanted should be put in now, otherwise their blooming well will be uncertain.

Carnations.—Keep them in a dry bottomed frame ; air freely, and water sparingly ; prepare a compound of equal parts loam and cow dung, for the final shift ; turn it often, and pick out every insect, especially wire worms.

Clematis, and other deciduous climbers, may be pruned and trained ; if cut down to the ground, lay a little loose manure over the roots.

Crocus.—Fork up the soil between these, just before they come above ground, choosing a dry day. Mice are very destructive to the roots, and should be trapped.

Cyclamens.—Freshen the soil among these, and in order to secure their full beauty, they must be sheltered in severe weather.

Dahlias.—Pot any of the old roots that are in danger of rotting ; a few of the good sorts may also be propagated, if there is plenty of accommodation ; if not, defer it until the end of February.

Erythronium (Dog's-tooth violet).—Plant, if not already done ; they must be placed near the edge of the beds or borders either in rows or patches.

Fuchsias.—Cover the roots with litter or rotten leaves ; if dry, the standards may be pruned and covered up with straw ropes or spruce branches.

Hepaticas.—Plant in a rich and strong soil : some plants may be taken up and potted for forcing.

Hyacinths.—Stir the surface of the soil when dry ; protect with litter, or hoop them over and cover with awning in severe weather ; cover those planted singly with a flower-pot inverted.

Jasmines, *Honeysuckles*, and other shrubs may be increased by cuttings planted in trenches, with river sand at the bottom ; when rooted, remove them to where they are required, or plant in nursery rows.

Pansies.—Keep the finer sorts in frames until spring, giving them full air in fine weather ; stir the soil and top dress with dung and leaf mould ; strew dry litter thinly over those exposed, during severe weather.

Picotees are very impatient of wet ; give all the air possible ; their treatment is the same as that for carnations.

Polyanthus.—Plant out in well drained and rich borders or beds ; sow seeds in pans in a cold frame.

Primroses.—Have a few plants in pots, especially of the double flowered kinds, which, if top dressed now and placed in a frame, will bloom early for the show-house.

Ranunculus.—Plant six inches apart, in loam and cow dung ; press the tubers gently into the soil, and a little sand may be placed under them ; drain the bed thoroughly.

Roses.—Remove entirely those shoots which can be spared, and shorten others ; balance well the heads of standards, and secure them by stakes. The final pruning must be deferred until the severe frosts are past ; protect the tender sorts in severe weather with dry moss at the roots, and dry material, as broom, fern, spruce branches, or withered laurel boughs ; they must be plentifully manured with cow dung, and require a strong loamy soil on a dry subsoil.

Stocks.—Sow a few of the German sorts in heat, for early blooming ; pot off carefully the first seedlings which vegetate, as these are proved to produce the greatest proportion of double flowered plants.

Snowdrops.—Stir the soil as they appear, which gives it a degree of freshness and neatness that much increases the beauty of the flowers.

Tulips.—Protect from frosts, and cover with water-proof cloth in wet weather.

Violets.—Some of the Russian variety, planted on a south border, and slightly protected, will furnish a supply of blooms. They are impatient of wet.

Wallflowers.—Plant them in masses throughout the borders, &c., where they will be easily removed when past blooming ; the soil should be enriched with manure, as annuals or other plants must come in their place by and by.

WINDOW GARDENING.

Bulbs, to be had in flower now, must be obtained from the forcing-house ; avoid keeping them in a draught of air, and water only with tepid water ; introduce few at a time. Put a little salt in the water for those in glasses, which does not require changing.

Begonias will now be quite dry and at rest ; repot a few of those which were early ripened, and excite them to grow by placing them in a gentle heat.

Camellias must be very carefully and regularly supplied with water, and that only when the soil feels dry.

Cinerarias are well adapted for the window, although not often seen there ; give them all the light and air possible, little or no heat, and plenty of water.

Evergreens, such as aucubas, laurels, laurustinus, sweet bays, junipers, daphnes, hollies, &c. should be provided in pots for the winter decoration of the balconies, &c. ; they require very little water, or any attention this month ; but in very severe weather all should be protected or housed.

Fuchsias, being dormant, must be kept nearly dry; prune in the side shoots, and be ready to start a few at the end of the month.

Geraniums.—Protect from cutting winds; give as much air and light to the plants as possible. The varieties called *Alba multiflora*, *Napier*, and *Colleyanum*, are amongst the best for forcing into early bloom, and of the scarlet sorts none is better than the *Tom Thumb*, a dwarf growing sort.

Myrtles, and other evergreens, must be kept cool; syringe them in fine mornings, as they are sure to get dusty, which is unsightly.

Roses.—Unless they are in a growing state water very little; moss over the pots of those in flower; apply tobacco liquor or snuff to those infested with green-fly.

Primulas are very impatient of water and damp; the soil should be chiefly leaf mould, with a little sand and loam, and well drained.

Violets, removed from the frames, will now be scenting the room; keep them near the light; frequently stir the soil in the pots, and remove all decayed leaves and flowers; admit air profusely.

Wardian Cases.—These interesting appendages must, if situated near the window, be protected or removed at night during frosty weather, but give them as much light as possible during the day. From 40 to 50 degrees will suit the generality of plants grown in them. They will require no water. Pick off every decaying part as soon as it appears; also stir the surface of the soil occasionally, to avoid any tendency to mouldiness or damp.

PITS AND FRAMES.

Alpines.—These should be plunged in coal-ashes or old tan, and either hooped over and covered with awning to protect them from wet and cold, or placed in frames facing the north; they must have plenty of air.

Annuals.—Towards the end of the month, sow in a hotbed a few seeds of the principal tender sorts for pot flowering, such as *amaranths*, *balsams*, *browallias*, *cockscombs*, *Thunbergias*, &c.:—Some of the half-hardy kinds, as *cobaeas*, *lophospermums*, *maurandyas*, *mignonette*, *schizanthus*, *schizopetalon*, *lobelia*, &c., may also be sown in a slight hotbed; but unless ample accommodation can be provided, it is better to defer sowing until next month.

Half-hardy Plants, such as *calceolarias*, *fuchsias*, *petunias*, *verbenas*, and other bedding out plants, require to be kept dry and clean: give them all the air possible in mild weather: water in the morning. Put a few of the better and rarer sorts in the forcing-house to produce cuttings. When the weather is very severe, and the frost penetrates through the coverings, let them remain covered until

they are thawed; thus the plants sustain comparatively slight injury.

Forcing Plants, such as *roses*, *azaleas*, *rhododendrons*, *lilacs*, *deutzias*, &c., together with the various bulbs, as *hyacinths*, *tulips*, *narcissus*, *amaryllis*, *jonquils*, &c., may be brought on in early vineries, peach-houses, &c., but it is better to have pits or a house, exclusively for them, which should have bottom heat supplied by some means. The points necessary to attend to are these:—To secure well ripened plants, and to have them well established in the pots; to place a few at a time in heat, and to apply it gently and gradually; to use tepid water always; to give air regularly, and shut up early, keeping the average temperature at 60 degrees by day and 50 degrees by night; to keep all the plants free of insects by fumigating for green fly; and maintaining a moist atmosphere, and so preventing red spider, &c. Should they become infested, slightly paint the flues, or pipes, with sulphur while they are cool, which will kill the spider and tend much to keep away other vermin. It is a most excellent plan, although not generally adopted, before forcing or even growing plants in the pits or houses, to cleanse them by burning within them a quantity of rags dipped in sulphur, taking care to have the places quite closed and to allow no means of escape to the adjoining ones. The plants must of course all be removed previous to this being done.

Violets.—The Neapolitan variety is the best for frames; they must be well aired, and kept near the glass: they are very impatient of wet; a slight heat (45 degs.) will keep them blooming; frost must not be suffered to reach them.

THE GREENHOUSE.

Temperature.—From 40 to 45 degrees by day; 35 degs. to 40 degs. by night.

Ventilation.—Admit air every day if mild: apply artificial heat during the day in damp or severe weather, and ventilate at the same time, taking care that keen winds do not enter; cover at night with an awning or mats.

Watering.—Let the water used be a few degrees warmer than the temperature of the house; apply it in the forenoon: keep the plants rather dry than wet, but never allow them to flag; look over them daily.

Potting.—Towards the end of the month, such plants as were designedly kept in store and small pots, may be selected and prepared for potting; get all the pots washed and dried, and the soil prepared and warmed to the temperature of the house.

Dressing.—Take off all the dead leaves as they appear; stir up the surface of the soil, and make it rather highest in the centre.

Staking and Labelling.—Before the busy

season arrives, get all the decaying tallies renewed; also a supply of stakes and labels prepared.

Insects.—Make it a rule to fumigate, as soon as green fly is seen; also to wash such plants as have become dirty, at the first opportunity.

Aloes, and succulents of this class, must be kept dry at the roots; remove the water that collects at the base of the leaves: they will be found to do with very little light, at present.

Agaves, and large succulents, require little water: and that which collects at the base of the leaves must be removed to prevent their rotting.

Alströmerias may yet be potted in six-inch pots, and placed in a cold frame: give them a loamy soil, adding a third part of peat, and well decomposed dung, with a little silver sand.

Amaryllis.—Pot afresh in loam, with a third part of leaf-mould and some sand: start them with a slight bottom heat; only part should be done now, so as to make a succession.

Annuals, as *humea*, *clintonia*, *schizanthus*, *brachycome*, &c., should be kept in a cool place near the glass, and carefully watered.

Azaleas, will be coming into bloom; retard the late sorts; a little liquid manure just before they expand their flowers will assist them; keep them with the heaths.

Calceolarias.—Those wanted to flower early, should be shifted early, or not at all; give them loam and peat in equal parts, adding a good deal of silver sand: place them close to the glass, where there is a free circulation of air; water moderately.

Camellias must be kept cool; remove a few of the plants to a warm house to expand their blooms; water very carefully.

Cape Bulbs, as *ixias*, *sparaxis*, *gladiolus*, &c., should be placed to receive a gentle heat, and plenty of light; some may remain in a cold frame: pot a few more of the reserved bulbs, and reserve others to make a final planting next month.

Cephalotus follicularis (New Holland pitcher plant) requires an intermediate temperature; if the house is not kept close, it must be covered with a bell glass, and kept moist: plant a little lycopodium, or common moss around it, keeping it neatly clipped in the centre about the plants, where it must be kept perfectly clear.

Cinerarias.—Keep these in a cool house or frame; shift them in succession, using a rich loamy soil, one-third of leaf mould and one-third cow dung, with a little sand. When large specimens are wanted, keep shifting them as they fill the pots with roots; confine the roots of those required early in flower.

Chrysanthemums.—Cut down as they finish flowering, and put them into a cool place where they will have light, and be free from frost.

Crassulas, and allied plants, must have very little water. The *Kalosanthes* may be shifted by the end of the month into equal parts of loam, sand, and peat.

Cyclamens.—Pot off seedling plants, and incite them to grow by placing them in the stove near the glass; use a compost of loam, leaf mould, and cow dung, in equal parts, with a little sand: also keep the old plants a little warm, and water the whole.

Epacris.—Bring these successively into bloom, by placing the most forward in a warm situation.

Ericas.—Give a free circulation of air, both night and day when mild; if severe weather prevails cover the house or frames at night, and use no fire heat if it can be avoided; they must be carefully watered.

Fuchsias.—Those wanted early should be put into a moist heat and pruned close in; give the resting plants but little water. Propagate approved varieties, which if struck early in heat, will make excellent specimen plants the same year.

Gompholobiums, and other slender creepers, must have trellises timely put to them; they flourish in sandy peat soil, and require perfect drainage.

Haworthias, and those of this class, require little or no water; keep a dry air circulating among them; also stir the soil in the pots.

Helichrysums, and Cape shrubs, must be kept in a cool and airy place, with plenty of light; water sparingly; bring them to a proper shape by tying them out, before the growing season commences; the stakes used must be as few as possible, and put in uniformly, and the ties made so neat as not to be much seen.

Leschenaultias, must have a light and rather warm place; attend to training and stopping the shoots (when growing), to make them compact and bushy.

Lilium japonicum (Japan lily).—This and the whole of the lilies require a rich turfy loam, with a little sandy peat, and plenty of pot-room. They should be potted immediately if not already done, and kept in a cold frame: in potting them leave about one-third of the space to be filled up with soil, as they grow.

Mignonette in pots must be kept cool and near the glass, and should have little water, and plenty of air. The caterpillars make great ravages on the young plants if not destroyed; the best remedy is hand picking.

New Holland Plants, as *acacias*, *hoveas*, *bossiaëas*, &c., should be treated nearly as the heaths: bring them successively into bloom, by moving them to a warmer house; give plenty of light and air, and stop those which are sending up strong shoots.

Orange trees.—Keep these in a cool and

almost resting state; a few may be brought into flower, by putting them in heat; if those in tubs are disturbed by worms, water with lime water.

Oxalis.—Pot any reserved roots in a soil of loam, leaf-mould and peat, equal parts: those potted in autumn, and kept in frames, may be brought into flower, by putting them into heat, and keeping them moist.

Pelargoniums.—In severe weather use coverings at night to avoid much fire heat: in mild weather give plenty of air through the day; stop the shoots of plants intended to flower in the summer months; every shoot on the plant should be stopped at once; tie out and keep the lower shoots well down, that the pot be almost covered with leaves. Guard against the attacks of insects, of which the green-fly is very injurious.

Primulas are impatient of moisture; they like a compost of two-thirds of leaf mould, one of loam, and a little silver sand. The double kinds are best; these increase by cuttings; put a few seedlings to keep up a succession of flower. Choose the largest and finest coloured kinds to grow as specimens.

Proteas, *Banksias*, *Dryandras*, &c. must be kept in an airy situation, and but little water must be given them.

Rhododendrons.—Put a plant or two of the most forward occasionally, into a gentle heat, to bring them early, and keep the general stock cool, and moderately watered. A few might be brought in from those out of doors, and potted in loam and sandy peat, equal parts.

Roses should be fumigated whenever green-fly is seen, or else syringed with tobacco water. For the forcing plants the heat should be about 55 degs. during day, and 50 degs. by night; allow the others to rest, and give air freely.

Salvias.—Cut these down when they are past blooming; they require an intermediate house to flower in, at this season: gently excite those which have been resting. The whole family require plenty of pot room, and a rich soil: apply water sparingly to such as are at rest.

Stapelias.—Give these very little water: clean any that may be infected with the scale insect, and keep them in a dry and moderately warm place.

Tropæolums should be potted immediately if not done in autumn, in soil of equal parts sandy loam and peat; adapt the pots and trellis to the size of the bulbs and kinds. In training carry the shoots to the top first, take them right over and back to the bottom, afterwards make good the deficient parts.

THE CONSERVATORY.

Temperature.—55 degrees by day, and 45

degrees by night; make an allowance of 5 degrees according to the weather.

Ventilation.—Admit air cautiously, and let it be only by the top sashes; avoid currents, which will do injury to all the plants, but especially the forced ones.

Watering.—Plants, when in flower, require more water than at any other time; such must, therefore, have enough, but avoid deluging them, and always use the water two or three degrees warmer than the temperature of the house. Those which are planted out will require little or no water until the end of the month.

Arrangement.—This feature is equally important with good cultivation. Aim at giving effect from the principal view or entrance, as the first impression tells most. Avoid an over-neatness and clipped appearance in the plants. Study to make the colours contrast against the green foliage; for although, as in flower-gardening, the grouping and arranging of the cold and warm colours cannot be fully carried out, yet much may be done by selecting the most handsome and showy plants, and placing them in conspicuous positions, without destroying the general harmony. These, during this month, should be such as salvias, gesneras, camellias, oranges, azaleas, gardenias, rhododendrons, roses, &c. Re-arrange the plants at least once a week, altering their positions so as to give the house a new phase; those plants which were at their best the previous week, must be placed in secondary situations this, and so on. Maintain an orderly and neat appearance.

Routine.—Next to arrangement is cleanliness; every morning go over and pick off all decaying leaves and flowers, giving each plant a gentle shake, to dislodge any leaves that may be hanging about; these often damage the unexpanded flowers and healthy foliage if not taken away; at the same time remove all the plants whose beauty is past; stake such plants as require it in due time, but the stakes should hardly be detectable. Rake the beds neatly, and sweep the floor daily, damping it previously so as to avoid dust. If the passage is of stone it must be often scrubbed.

Temporary Plants.—This includes all that are in pots. Those which are past bloom, and being removed, should be well treated; the generality of plants, immediately after flowering, make a new growth for the development of flowers the following year; it is therefore of the utmost importance that they should be placed in situations where the young shoots may be developed and fully matured.

Insects.—Every plant that is sent to the conservatory should be perfectly clean, and when any are found dirty they should be removed, cleaned, and returned. This may be effected

at times when other houses are being fumigated, &c.; but whilst such opportunities should be taken, they must not be considered as the only mode or means of effecting the purpose.

Amaryllids, and other bulbs should, after flowering, be returned to the warm pits and frames, and have plenty of weak manure water, and all the light possible.

Azaleas.—The early ones may be made still more early by putting them now in heat, so as to forward and mature their growth.

Camellias.—Those whose bloom is past should be taken to the early vinery, or some similar situation, where they will have the shade and heat they require. Proper attention to regulating the period of the growth of the plants, would give Camellias at all seasons.

Climbers.—Thin and cut them in moderately, and wash them if at all infested with vermin, using clear water and a sponge, or soft brush.

Gesnera zebrina.—Keep at the warmest end, and when past blooming allow it to get gradually dry, and fall into a state of rest.

Luculia gratissima.—Give copious waterings, gradually decreasing as the flowers decay: cuttings will strike readily now in a gentle heat.

Roses.—Prune those on the pillars, and when uncovered, the pillars should be thoroughly washed. If there are no roses upon them, some should be procured, such as the yellow and white Banksian, and the Perpetuals; give them a soil of strong turfy loam and dung in equal parts. The China, tea-scented, and Fairy roses, in pots, must be kept scrupulously clear of green-fly, &c.

THE PLANT STOVE.

Temperature.—From 55 to 60 degrees by day, 50 to 55 degrees by night; this structure is usually kept too warm at night, at this season.

Ventilation.—Admit air cautiously, and only in the forenoon, say for an hour, unless the sun is very bright; the thermometer may be allowed to rise to 70 degrees with sun heat.

Watering must be done sparingly, and discontinue syringing altogether; keep the atmosphere moist by often watering the flowers, &c.

Potting.—No general shifting should ever take place; but there are always some growing plants, and those required to be large must not be checked by getting pot-bound; the soil used must be always of the same temperature as that the plants are growing in.

Insects.—This is a favourable time for cleaning the plants; the green-fly and thrip are most effectually destroyed by fumigation; for the scale the plant should be washed first

with soap and water, and then syringed with pure water; for the red spider or mite, partially paint the flues or pipes, when they are cool, with sulphur. Clear soot and tobacco water syringings also serve for these ends. It is better, however, to keep up a healthful atmosphere, and have the plants in such a state as to repel the attacks of vermin.

Achimenes.—Towards the end of the month a few of the tubers may be potted in four-inch pots, in a soil of loam, leaf-mould, and peat, in equal parts, adding some silver sand; or they may be put in heat to start, and then potted. See that the resting tubers are not kept in a too cold or a damp situation; they often perish in cold greenhouses.

Allamanda, *Beaumontia*, *Echites*, and all strong growing climbers should be thoroughly cleaned, slightly thinned, and neatly tied up.

Alpinias, *Hedychiums*, and other reedy plants, do well planted out in a very rich soil: of those in pots excite a few into growth; very little water will do until they have made some advance: they are increased by division of the roots.

Aphelandras, *Justicias*, *Ruellias*, &c., if wanted dwarf, will mostly bear cutting down after flowering; they may be propagated from single eyes, and made to flower the following season. Propagate only the good sorts.

Begonias.—A few of the tuberous rooted kinds may be shaken out and potted afresh, and put into heat; use a rich soil of loam, leaf-mould, dung, and sand, well incorporated; those resting must be kept dry. The shrubby sorts now growing must be supplied liberally with water; increase them by cuttings.

Burchellias should be kept cool until next month, unless wanted to flower early.

Cacti.—Most of these must be kept dry. Those coming into bloom should be regularly watered; some should be accelerated and others retarded, so as to make a succession. The *Epiphyllum truncatum*, which will now be blooming, does best when grafted. The *Pere-shea acullata*, which is commonly used, is inferior as a stock to *Cereus triangularis* or *C. speciosissimus*. The operation may be performed now; choose a straight stem, from two to six feet high, and graft it from the bottom all around to the top, thus forming a fine plant at once; the grafts should be tied on with damp moss, and kept close and warm.

Cinnamomum (the Cinnamon tree).—Apply water sparingly; towards the end of the month they may be shifted if they are beginning to grow; use a soil of loam, with a little peat and sand.

Clerodendrons.—A few may be put into bottom heat; cut down the old stems to within six inches of the pot, and pot them into rich loamy soil.

Climbers.—Prune by shortening and thinning the branches. These plants, like fruit trees, are often suffered to grow too thick.

Daturas should have plenty of pot room and heat, and a supply of liquid manure just before blooming; towards the end of the month excite a few of the rested plants, and propagate from single eyes, putting them singly into small pots, and setting them in a hot-bed until they have started.

Erythrinæ.—If these have been kept in a cool place and cut back, a few may now be taken out and potted in a rich soil, and put in bottom heat.

Euphorbias must be kept rather dry, but never allowed to droop; *E. Jacquiniflora* will continue longer in flower by being kept cool.

Ferns.—Keep cool, and not so moist as at other seasons; they generally like a humid atmosphere.

Gardenias require bottom heat, a moist atmosphere, a temperature of from 60 to 70 degrees, and to be kept near the glass. Repot the young plants for succession.

Gesneras, *Gloxinias*, &c.—Start a few of those which seem inclined to grow; use a soil of one-half loam, and one-fourth each of leaf-mould and peat, adding a good portion of silver sand; put them where they will have a slight bottom heat and plenty of light; keep the others warm and dry. *Gesnera zebrina* should be gradually dried off, and laid aside to rest.

Hippeastrums, *Crinums*, *Pancratiums*, &c.—A few of these should be started in the forcing-house, and have bottom heat; keep those which are in a resting state rather dry.

Hydrangeas, being now forced into bloom, should be set in pans of water; the large plants must be neatly tied out and not crowded.

Ipomœas.—Prune the perennial kinds, and keep them in a dormant state; a few seeds of the annual kinds may be sown late in the month.

Ixoras.—Tie out the branches so as to give plenty of room for the heads of flowers to expand. Some of the earliest may have a little bottom heat, and be placed near the glass; water according to their vigour: they are amongst the best stove shrubs.

Jasminums, *Rondeletias*, *Brunfelsias*, &c., unless in a growing state will require very little water; a few of each may be gently forced on.

Lantanas.—Prune back the old plants; give them a moist heat and plenty of pot-room, using a boggy soil; they may be propagated for planting out in summer.

Luculias.—Propagate extensively; they will strike freely in bottom heat; give the flowering plants a good supply of water and keep them cool.

Lycopodiums delight in shade and moisture; this month apply both moderately.

Malvaceous plants require a good deal of pot-room. *Hibiscus rosa-sinensis*, and other shrubby sorts, may be started by the end of the month; also then sow a few seeds of the different annual kinds in a hot-bed.

Manettias, and other tender climbers, are impatient of much water; slightly stir the soil, and when they evince signs of growth, shift them into a soil of sandy peat, and a little loam, and neatly tie them anew.

Melastomas.—Give them more than an ordinary degree of moisture, heat, and pot-room; when they commence growing shift them into a fresh and rich loamy soil.

Melo-Cacti must be kept rather dry, and in an inactive state.

Musas (Plantains).—Keep as much at rest as possible; they must not have the usual supply of moisture; the regular moisture of the house will be nearly sufficient for them.

Nepenthes (Pitcher plants).—Place these at the warm end; surround the pots with moss, and have some of the smaller *Lycopodiums* growing over the soil and the pot, but not to choke the plants; keep a continual heat arising among the moss, which must be kept moist, and the atmosphere humid.

Neriums.—Keep very cool until wanted to flower, when abundance of moisture and heat must be given; cut down the old unhandsome plants, and when started pot them in a rich loamy soil.

Nymphaeas and other aquatics are all the better for being planted within a pan or pot, whether they are in cisterns or ponds; keep the vessels always full of water, making them to run over sometimes so as to clear away any impurities; always apply the water in a tepid state.

Palms.—These must be kept at the warm end; maintain a moist atmosphere, and syringe in clear weather; supply those in fruit with liquid manure in a tepid state.

Polianthes (Tuberose).—Pot these now, if not done in autumn, using pots in proportion to the size of the tubers; use a rich loamy soil, adding a little sand and well decomposed cow dung; put them in a cool place at first, and remove them to a warm situation as they show signs of growth.

Thunbergias.—Allow these to remain in an inactive state; they are very difficult to keep free of red spider; syringe them during periods of sunshine, and keep the air moist: sow a few seeds about the end of the month in bottom heat.

Vincas.—Give a slight bottom heat to the young plants especially, and top the shoots to make compact and handsome plants.

ORCHID HOUSE.

Temperature.—The flowering house from 60 to 65 degrees by day, and 55 to 60 degrees at night; the resting house from 6 to 10 degrees colder.

Ventilation is not required further than what will take place through the apertures; cover the house at night with awnings, or mats, which renders a less amount of fire heat necessary.

Watering will hardly be necessary, except to those which are growing; water must not be allowed to remain long at the base of the leaves, and the quantity must be lessened with those that are ripening off; damp the floors moderately every day, increasing a little if the weather is clear.

Insects are particularly destructive as the young shoots appear; catch the wood-lice by using bean stalks, or any other hollow stalk, also potatoes cut in halves and hollowed out will entrap them; these traps should be examined every day, and the insects caught destroyed. For the cock-roaches use a composition of spermaceti one-quarter pound, and arsenic two ounces, melted together, and put on one end of a short stick, the other end being stuck in the soil. There are many insects which increase and remain about the blocks and baskets; an excellent way to get at them is to dip the basket almost to the top in the cistern, and allow it to remain for a few minutes, when the insects, in escaping from the water, will be found running upon the surface of the soil.

Potting.—Those plants which are showing early signs of growth, should be shifted: if they have been kept very dry, steep them in tepid water, allowing them afterwards to stand for a few days before shifting them.

Soils.—The *Cyrtopodiums*, *Bletias*, *Sobralias*, *Phaiuses*, *Calanthes*, *Cypripediums*, and such like, will do well in rich turfy loam, adding a little peat. These may be grown in pots, filling the pot half full of drainage, and also mixing with the soil some potsherds or charcoal; plunge them in a brisk bottom heat and keep them so, and well watered, until they have perfected their growth. Those which require baskets are to be well elevated in the pots, as *Oncidiums*, *Catasetums*, *Dendrobiums*, *Cattleyas*, *Epidendrums*, *Maxillarias*, &c., grow in light peat earth, or what is nearly the same, rotten sphagnum, which should also be well mixed with broken crocks, or charcoal; the portion of soil elevated above the pots must be fastened together with pegs. Many sorts are found to do well on blocks, as *Barkerias*, *Broughtonias*, *Phalenopsis*, *Laelias*, *Huntleyas*, &c.; in this case a little sphagnum is used below and above the roots, and the whole is

fixed on with zinc fastened to copper tacks driven into the blocks. The *Stanhopeas*, *Gongoras*, and all whose flower spikes are pendant and thrown out from below, are grown in baskets, and require to be suspended; they prefer a similar soil to the preceding. The whole will be found to agree generally, as regards heat and moisture, when in a growing state, but the Mexican sorts are hardier and require less warmth than the Indian species. The *Cypripediums*, and some others, are found to be almost hardy. In general turfy peat in small lumps is proper for these plants. This is mixed with broken pieces of crock, or of charcoal, when used. Some persons employ a mixture of turfy loam and old rotten wood; others use sphagnum moss cut rather small, and suffered to partially decay. All these mediums are suitable to the plants, and it is not material which is preferred.

Plants in Flower will be longer preserved by being kept cool, and may be sent to the drawing-room or conservatory, taking care not to expose them to draughts or currents of air. They will bear a pretty good supply of moisture when in a warm place whilst in flower, but when in a cold situation a very small quantity is required, and it must be given a little warmed. Small young plants, and such as are intended as specimens, should not be allowed to flower, but should be excited and kept shifted and growing on—the heat and the humidity being increased with the length of the days, and the strength of the natural light.

Mode of Potting, &c.—Some of this class of plants require to be grown in pots, others attached to blocks, and others planted in open baskets, &c. The mode of growth which is most suitable for the more important genera is here indicated:—In pots, not elevated:—*Acanthophippium*, *Bletia*, *Calanthe*, *Cypripedium*, *Galeandra*, *Paxtonia*, *Phaius*, *Sobralia*, *Stenorrhynchus*. In pots, elevated among open lumps of soil, or in open baskets:—*Acineta*, *Aërides*, *Angraecum*, *Anguloa*, *Anæctochilus*, *Barkeria*, *Brasavola*, *Brassia*, *Catasetum*, *Cattleya*, *Cirrhaea*, *Coryanthes*, *Cymbidium*, *Cyrtorchilus*, *Cyrtopodium*, *Dendrobium*, *Epidendrum*, *Eria*, *Houllettia*, *Laelia*, *Lycaste*, *Maxillaria*, *Miltonia*, *Odontoglossum*, *Oncidium*, *Paphinia*, *Peristeria*, *Promenaea*, *Sarcanthus*, *Trichopilia* *Warrea*, *Zygopetalum*. In baskets:—*Acropera*, *Aërides*, *Angraecum*, *Cynoches*, *Dendrobium*, *Gongora*, *Saccolabium*, *Stanhopea*, *Vanda*. Attached to blocks:—*Aërides*, *Broughtonia*, *Burlingtonia*, *Camarotis*, *Cœlogyne*, *Compartmentia*, *Huntleya*, *Laelia*, *Odontoglossum*, *Phalenopsis*, *Renanthera*, *Schomburgkia*, *Scuticaria*, *Sophronitis*, *Trichosma*, *Vanda*.



CONE BEARING, OR CONIFEROUS PLANTS, AND THEIR ALLIES.

INTRODUCTORY REMARKS.

THERE is no section of vegetation at once so beautiful, majestic, and useful as that recognised by botanists under the title of *Coniferæ*. The trees of this order follow nature in all her grander appearances, girding her loftiest mountains, and filling up her unexplored and illimitable plains. Lebanon, the less famous American forests, the Himalayas, and Rocky Mountains, bear, or have borne sufficient evidence of the very striking character of those plants. Over these, and such districts, the trees in question have long cast "a weight of glory." Their height, beautiful towering or spreading shape, the freshness and perennial nature of their verdure, their bold standing in the fastnesses of rugged mountains, their arms entwined about savage rocks, and other characteristics, have long afforded imagery for the poet and naturalist. Indeed, the matter-of-fact measurement of some of the trees is so astonishing as to approach almost to the sublime. Douglas informs us that, on the north-west coast of North America, he found a tree of Lambert's pine which had been blown down by the wind, and which was certainly not the longest, to be 215 feet in length; its circumference at 3 feet from the root 57 feet and 9 inches, and at 134 feet from the root, 17 feet and 5 inches.

Perhaps the most striking references to the grandeur of the tribe of plants now under consideration, are to be found in the writings of the Hebrew poets. The cedar which clothes the magnificent ramparts of Lebanon has been always looked upon with respect and reverence. The prodigious bulk of its stem, its great roaming branches, its steadfastness

amidst the fury of the tempest, its resistance to the vicissitudes of time, all appear to have recommended it as an object calculated to excite a feeling of wonder and admiration. One of the sacred writers selects it as a figure to express the majesty and powers of the Almighty:—"The voice of the Lord breaketh the Cedars; yea, the Lord breaketh the Cedars of Lebanon." The lofty and graceful Deodar, again, we find raising the mind even of the Hindoos, for they universally regard it as the "tree of God," called by them *Devadara*, and specially planted, as they suppose, by his Almighty hand. But it is not at all necessary to go farther than the north of Scotland for living illustrations of the very noble character of the objects about to be described. The grand old trees of the original Scotch pine, growing on the heights of Breinar, Abernethy, Rothiemurchy, and Duthil, with their thick and long trunks, contorted arms, and shaggy spray, add an invaluable feature to the bold scenes of that part of the country. Indeed, the plants ranged under this order contribute very largely to every degree of beauty and grandeur observable in the face of the earth; and as the most of them are unchanging in their verdure, they form the fittest of all accompaniments to the more enduring appearances of nature. To decorate rocks, ravines, frowning steeps, and hills, the Scotch pine is admirably adapted. For the slopes of hills and for plains where a quieter degree of beauty prevails, the larch, spruce, and silver fir are the most appropriate. For deep woodland solemnity, no tree can compete with the cedar of Lebanon and the cedar of India, though these

two are at present generally found only on gentlemen's lawns. In softened scenes, the hemlock, spruce, and red cedar may be planted with propriety; and again, in those magnificent, though at present deserted, sites by the sea-side, two individuals of the order are only waiting to be called upon to show that they are capable of resisting the usual effects of salt water. The *Pinus Pinaster*, and the *P. Pinaster minor*, or, as it is sometimes called, the *P. maritima*, are the two plants I refer to.

But the order under consideration supplies us not only with beautiful and grand pictures to look upon, but *the ear* is often engaged in listening to the music caused by the trees when associated together. The waving to and fro of the tops of pine woods, when the winds are high, is calculated to fill the mind with an incommunicable idea of the majesty of nature, such as is excited only by a forest, or by the sea. The shouting of the tempest whilst traversing the vast sylvan regions of America, is described to be grand in proportion to the height and bulk of the trees, and always listened to with a feeling approaching to awe. When a breeze is abroad, extensive woods and forests of the Scotch pine afford to some temperaments delightful music, such as could be listened to for hours with pleasure; to others it is melancholy beyond expression; whilst all agree that it is quite indescribable. The sound referred to is of a sweeping or hissing description, and is certainly best characterized by the Scotch word *sough*.

The uses of this order of plants are greater than that of any other; and on this account alone every particle of information relative to the propagation and growth of the different species is worthy of the closest attention. Though the oak is justly prized as contributing greatly to the strength of the wooden walls of England, yet the pine tribe has assuredly been of material service, along with the former tree, in all the purposes of naval architecture. The outworks, it is true, have been of oak, yet the no less necessary subsidiary parts have been of pine and fir. In some parts, indeed, deal timber has entirely superseded that of the oak; and the larch in particular has been found to answer extremely well for ship-building. The frigate "Athole," built in 1820, was entirely of the latter wood, and competent judges have pronounced it to be, in some respects, even superior to the oak. In domestic architecture, the trees forming the present order are universally in use, as preferable to all other ligneous products. In house-building, and in the construction of household furniture, it would be most difficult to find a substitute for the Scotch pine; and if we extend our view

to all the purposes to which pine and fir trees are assigned, such as scaffolding, railing, fencing, machinery, farmers' outbuildings, and such like, it may be safely asserted that they are positively indispensable. The spread of railways has given an importance to this order of plants which hitherto was not thought of. The vast quantity of timber required for sleepers, on which the rails are laid, has operated very extensively in the northern districts of Scotland, in inducing proprietors to plant all, or, in some cases, a great proportion of their waste lands. It is not only the quantity required in the construction of a railway, but the timber, *ad infinitum*, that must be had to keep it up; the sleepers having all to be removed and fresh ones inserted every seven years. This use alone would justify a publication, at the present time, solely devoted to the best method of propagating and rearing the trees destined to occupy such an important place in helping forward the commerce of the country. Add to these uses, the products extracted from many of the trees, such as resin, turpentine, tar, and pitch. It is also to be remembered that they afford fuel to many persons living in mountainous districts, and that the roots of the Scotch pine, when split up into thin splinters, or lamina, are used by the highlanders as a substitute for candles, which emit a clear and steady light, though requiring almost constant tending. The uses of such trees, in their living state, consist in their adaptation to situations where many kinds would not grow, and in their being admirably fitted to protect others wherever exposed to the severity of the weather. Their use to man in sheltering his dwelling, is also well worthy of being noticed, for however exposed the situation may be, several of the species are ready to throw their sheltering arms around it. In truth, but for the Coniferae, the appearance of winter throughout hilly and mountainous districts would be terrible, and, to many, insupportable.

The claims which this order has upon all those who are wishful to form arboretums, or to study certain sections of ligneous plants, will be apparent to every one. No order is more beautiful in the foliage, in the disposition of the branches, and none more lofty. It would be difficult, therefore, to estimate too highly the importance of this class of plants, whether considered as objects adorning the landscape, or as supplying one of the first materials for the use of man. As the order Taxaceae, including the yew tree, and its allies, is so nearly allied to that of Coniferae, it may be worth while, for the sake of completeness, to describe the few species belonging to that division, before proceeding with the Coniferae, or true cone bearing plants.



TAXACEÆ.—THE YEW TRIBE.

TAXUS, *Linnaeus* (the Yew); from *Toxon*, a bow, an instrument of warfare used from the earliest times till about the year 1500. The English name, Yew, is from the Celtic *iw*, signifying deep green. There are two distinct species.

Taxus baccata, *Linnaeus* (common berried Yew). This species has its leaves thickly ranged in two ranks; they are very nearly sessile, or without foot-stalks, and are about an inch in length in vigorous growing plants. The flowers come from scaly buds, are solitary, and proceed from the small angle formed by the union of the leaf and stem. In some instances the sexes are found on the same tree, but not often. The male flowers are of a lightish brown, and the female are green, surrounded with neat bracteas, or cup leaves. The fruit is a scarlet oval-shaped berry partially enclosing a nut-like kernel, open at top, and when in a ripe state, contrasted with the deep colour of the foliage of the tree, it presents a particularly handsome appearance.

The Yew is scattered over a wide geographical range, being common to Europe, Asia, and North America. In its wild state, it is found on the sunless sides and at the bottom of mountains, preferring moisture; and it delights particularly to grow in low sites in the clefts of rocks, where a rich soil has been washed from adjacent steeps and hills. It boasts of a very ancient history, having been known to all the celebrated authors of Greece and Rome. In this country, it has been from time immemorial reckoned a gloomy object, a tree of the night rather than of the day, generally found about desolate or ruined

buildings, and not unfrequently indicating the lonely and peaceful churchyard. It is a tree of affliction, a sorrowful object, and by the common suffrages of mankind, typical of wounded affection. From seeing it so often in such situations, associated with the mournful silence of the grave, it is even in modern times invested with a character almost sacred and inviolable. From its unchanging appearance, coupled with its hardiness and longevity, it has been adopted as figurative of Eternity. It lives to the age of a thousand years and upwards, and in some parts of Wales it is considered to be immortal, for, as the inhabitants there express it, "it never dies outright." Wordsworth has pronounced it to be

"A living thing,
Produced too slowly ever to decay."

That it lives to the age assigned to it there can be very little doubt. Of the age of the the Yew in Fortingal churchyard, Perthshire, there is no precise account; but it is believed to have been a flourishing tree at the commencement of the Christian era, and that it may yet exist for some centuries to come. The yews at Tytherly in Wiltshire, are above 500 years old; and those at Fountains Abbey, in Yorkshire, are ascertained to be of an age upwards of 800 years.

In glancing at the history of this tree, it is curious to consider to what a variety of purposes it has been made subservient, and to what opposite ends it has frequently contributed. Looking upon it rising in doleful silence about the graveyard, the chosen object of that peaceful abode, and planted there as if

to reconcile the affections of the living, it is somewhat difficult for us to believe that it should ever have been in this country the principal weapon in the strife and momentous day of war, and that it is associated with some of the greatest internal commotions our country ever experienced. Turning to the remote pages of our English history, we find that from the earliest times to the date of the invention of fire-arms, and even afterwards, the yew-bow was the chief instrument in the hands of contending armies. The famous battle of Cressy was fought with yew-bows; and the victory of Poitiers was chiefly ascribed to the excellent archery of the English with these implements. The decisive triumph over the Scots in 1402 was obtained by the English bow and arrow; and the battle of Agincourt, in which Henry V. proved himself so victorious over the French, was achieved principally through the use of this weapon.

The Yew is cultivated by seeds, by cuttings, and by layering. The berries are ripe in the month of October, and it is necessary to watch them narrowly, else the birds will devour them. Thrushes and blackbirds are remarkably fond of the pulp, but the kernels they drop, and they may be always picked up in considerable quantities under adjoining trees. The most expeditious way to collect the berries is to spread a large coarse cloth under the tree, and then to shake the branches violently; but as many of them will still adhere to the branches, it is necessary to take a long stick with several stubborn twigs left upon one of the ends, and draw it sharply along the under side of the spray. This treatment will readily detach them, and, falling upon the cloth, they can of course be speedily got together. They should be immediately sown, as gathered, in a free moist soil, shaded from the south, but not under, or near to, large trees. Clayey soil, which is apt to get baked or crusted in dry weather, will not suit, for the crop depends in a great measure on the state of the soil when the seeds begin to vegetate, which will be sixteen or seventeen months after the time of sowing. If not formerly enriched, the ground should have a good coating of well-rotted manure; and if the sun should have access to the young plants, branches must be stuck in amongst them in order to shade them. Mice will attack the beds immediately after the berries are sown, and if not protected, they will totally destroy them. The setting of traps, &c., is a mere waste of time; and nothing that I know of serves so completely to deter them as a coating of fresh unmixed horse-dung, sifted with a wide sieve regularly over the beds to the depth of an inch. This coating should be pressed down evenly with the back of a spade. If, after the lapse of

several months, it should so far decay as to become inefficient, it should be renewed, and finally removed with a rake when the seeds begin to grow. The plants should remain two years in the seed-bed, and then be transplanted into lines nine inches apart, the plants in the lines being placed about two inches from each other. At the end of two years more, they will require to be removed again into lines eighteen inches apart, and placed in the lines at about six to eight inches from each other. Their growth may be considerably advanced by pruning off all such side branches as interfere with the supremacy of the leader; and beyond this treatment they will require nothing more at the hands of the nurseryman.

When cuttings are to be made, shoots of nine inches in length should be selected in the month of August, taking care to cut them immediately below the previous year's growth, so that a small portion of the wood which is two years old may adhere to each. If this be attended to, they will strike root more readily. The lower leaves should be trimmed off, and the slips planted in a sheltered and shady border of light sandy soil and peat. In the course of two years they will be sufficiently rooted to be removed into lines as recommended for two years' seedlings.

Layering of this tree is a plan not often resorted to, and it requires of course a bushy, spreading stool from which the branches can be made easily to bend into the ground. All the layers require to be cut in the same way that picotees and carnations are done, that is, immediately under a joint from which the roots proceed. They require to remain two full years at the stool before they are sufficiently rooted; and care must be taken when planted in nursery lines, to prune them so as to induce the plants to furnish themselves with proper leading shoots.

On account of the slowness of its growth, and the comparative smallness of the size it attains, the Yew will never be in general use as a timber tree, though its wood has been represented as superior to a great many others for cabinet-work. In its living state it will continue to be valued for its use in hedges, in protecting tender plants, and as affording food and shelter to a portion of the winged tribes. It is one of the trees from which the nightingale delights to serenade the inhabitants of our suburban villas; and its thick shelter is particularly agreeable to thrushes, blackbirds, and singing birds in general, during the cold of winter and throughout spring, before other trees are furnished with leaves. Its great charm, however, consists in its singular adaptation to scenes of a sorrowful and hallowed description; for though many trees are now

admitted into cemeteries, there is not one so constant in funeral hues, and consequently, none so appropriate when rising in that place of "deep forgetfulness," to which it has been so universally assigned. Plants, one year's seedlings, 20s. per thousand; two years' seedlings, 30s. per thousand; and three years' seedlings, 40s. per thousand. One year's transplanted plants, 5s. per hundred; two years' transplanted, 7s. 6d. per hundred.

Varieties.—*T. baccata erecta*, is a plant preserving the character of the species in its leaves, yet assuming the same erect form as the Irish Yew. Variegated specimens have been propagated, but the marking is indistinct and apt to be lost. A stunted variety of the common tree, with a procumbent or trailing habit, finds a place in Loddiges' Catalogue, under the title of *T. procumbens*. A plant with narrower and smaller leaves than those of the common, found in Maryland, bears the name, in some collections, of *T. canadensis*, but as Willdenow observes, comparing it with the common tree, "a specific difference is hard to be detected." Indeed, it would be very easy to select many varieties from a bed of seedlings; and in plantations of grown trees, scarce two plants can be found with the habit and size of leaves and fruit alike.

Taxus fastigiata, Lindley (upright, or Irish Yew.)—This very much resembles the upright cypress in the mode of its growth.

The leaves of this species are not in rows, but proceed irregularly from the branches on all sides: they are of a deep green colour, somewhat larger than those of *T. baccata*; and the plant altogether is much more ornamental than the common species. No tree rises with more grace on the well-kept lawn; it is of an elegant, tapering, compact form, and is well calculated to remind one of the sweetest Italian scenes, especially if the ground-work in the neighbourhood is only in keeping with the place where it is grown. There are but very few old specimens of this tree in England, and hence it is deficient in association. In Ireland, at Comber, in the county of Down, there is a specimen twenty-five feet in height, but it assumes a habit by no means characteristic of the species, its form being that of an inverted cone, its head measuring sixteen and a half feet in diameter. The natural habit is strictly tapering.

This species may be readily propagated by cuttings, planted under glass in September, in an equal mixture of peat, road-sand, or other inland sand, and light loam. The cuttings should be shaded either permanently by a fence, or with mats fastened over them in such a way as to admit light from the north. The hand-glass or frame should not be removed except temporarily until the plants have begun to make shoots, which will be in June and July following; and in no



Torrey taxifolia.

case are they to be exposed to the fierce mid-day sun until they have fully established themselves as plants fit for removal into nursery lines. The propagation of this plant will well repay all the trouble of the amateur or nurseryman, for it is one of those shrubs always in demand, and with which the market is never overstocked.

TORREYA, Arnott.—This genus was named by Dr. Arnott, in compliment to Dr. Torrey, a clever American botanist, and one of the authors of the North American Flora.

Torrey taxifolia, Arnott (yew-leaved Torrey).—This is the only species. It is an evergreen tree, with forked branches, and has something the character and appearance of the hemlock-spruce fir. The branches are clothed with simple, linear, sharp-pointed leaves, arranged in two ranks, one on each side of the branches. The fruit is ovate, covered externally by a leathery integument having a small opening at the top, and is about the size of a nutmeg. It is a native of Florida, occurring on chalky hills, along the eastern bank of the river Ap-

pelach; and was introduced to this country in 1840. No large plants of it exist in a cultivated state; and it is still rare in collections. Like other rare plants of this class, it is propagated by grafting on allied species, and in this case, the common yew tree is employed; it is also increased sparingly by cuttings; but neither of these modes are well adapted to secure permanent and handsome plants. When it is grafted, it should be placed very low on the stock, almost on the root, so that the point of union may subsequently be covered with soil; if this is the case, the scion will usually produce roots, which are of great aid to the plant, and afford some security for its permanence. *Torreya taxifolia* is identified with the *Taxus montana* of Nuttall, but not of other botanists.

In Florida it forms a tree, growing from twenty to forty feet high, and with a diameter in the trunk of eighteen inches. The wood is there employed generally for most of the purposes to which its size adapts it, and is heavy and close grained, and when mature, of a reddish colour. Like the timber of other allied plants, this is very durable, and not liable to the attacks of insects, being charged with terebinthinate matter; in fact, a pasty turpentine of a blood red colour oozes sparingly from the bark. The wood possesses a very strong and peculiar odour, especially when bruised or burned; and hence the tree bears, in Florida, the name of the Stinking Cedar.

SALISBURIA, *Smith*; in honour of Salisbury, a botanist. In Japan, its native country, it is called Ginkgo, a title which it retained throughout Europe till 1796, when Smith substituted its present name, on account of the other being, in his opinion, "uncouth and barbarous." There is one species only.

Salisburia adiantifolia, *Smith* (maiden-hair-leaved *Salisburia*).—A stately tree, growing around the pagodas and temples of China and Japan, and plentiful about Jeddo, Peking, Canton, and other cities, where it rises along with the *Rhus vernicifera* (varnish-yielding *Rhus*). In England it assumes the habit of some of our upright-growing pear trees, with rough, grey bark, slightly furrowed when old like the common acacia. The leaves are of a pleasant green, thickened at the outsides so as to have a succulent appearance, are irregularly triangular, and bilobed, or parted at the upper end into two, and sometimes three, divisions. They resemble the leaves of some species of *Adiantum* whence its name of maiden-hair tree. The male flowers appear in May, on old spurs of the preceding year, without any footstalk, and are of the colour and size of the blossoms of the common berberry. The female flowers are inclosed

within a calyx-like involucre or cup, something like the yew berry in its young state. The fruit is a white nut enclosed in a globular drupe. The kernel is eaten in China after being roasted, in the same way as chestnuts are done in this country.

Till lately, all the discovered trees in Britain were thought to be males, but in 1818 a female plant was reared from a cutting sent to Kew Gardens, and from that quarter a great many scions have since been distributed. As a proof of the enthusiasm and patience with which the late Mr. Loudon prosecuted the task of preparing his great work, the *Arboretum Britannicum*, it may be stated that in 1835, he and the writer of these lines were several days employed in the suburbs of London in searching for all the old *Salisburias* that could be heard of, in order, if possible, to discover one with female flowers. The pursuit was unsuccessful; and the only discovery made amounted to this—that the fine specimen then (and probably now), standing in the Mile-end Nursery, was a male, Mr. L. having detected flowers upon a plant in an adjoining garden, which had been raised from the old specimen in the nursery.

Male plants are very common in the London nurseries, and are sold according to size and age from 1s. 6d. to 4s. 6d. each. Those who are in possession of the male, and wish for the other, had better graft a slip of the latter on the male tree.

The sure way of propagating this plant is by layers. The stool should be planted in a loose sandy loam trenched to the depth of three feet; in this soil it will thrive better than in any other. In the immediate neighbourhood of the young shoots intended to be laid down, a quantity of sharp road-sand should be introduced, and if the twigs are carefully cut under a joint, as picotees are done, and covered with a hand-glass, they will root very speedily. I have tried them in March and in September, and find that they answer equally well at both these times. For such trees as are planted out permanently, the same sort of soil is recommended. A sheltered situation is necessary; and though little is to be expected from this plant as a timber tree in this country, it forms a most desirable object for the lawn and pleasure ground.

In one of his lectures at the Jardin des Plantes, Thouin thus relates the singular manner in which this plant found its way into France:—"In 1780, a Parisian amateur named Pétigny, made a voyage to London, in order to see the principal gardens; and among the number of those he visited was that of a commercial gardener, who possessed five young plants of *Ginkgo biloba*, which

was still rare in England, and which the gardener pretended that he then alone possessed. These five plants were raised from nuts that he had received from Japan; and he set a high price on them. However, after an abundant déjeuner, and plenty of wine, he sold to M. Pétigny these young trees of Ginkgo, all growing in the same pot, for twenty-five guineas, which the Parisian amateur paid immediately, and lost no time in taking away his valuable acquisition. Next morning, the effects of the wine being dissipated, the English gardener sought out his customer, and offered him twenty-five guineas for one plant of the five he had sold the day before. This, however, was refused by M. Pétigny, who carried the plants to France, and from those five have been propagated the most of the Salisburias in that country."

It is somewhat singular that notwithstanding its striking appearance, its unique leaves, and handsome habit, the Salisburia is very seldom seen throughout England.

A plant of it grew against the stove in the grounds belonging to the late Mr. William Malcolm of Kensington, but in all probability it has been removed to make way for the improvements effected there by his successor, Mr. Forrest. In the country it is still more rare; and though introduced so long ago as 1754, passes currently as a novelty.

There are several *half-hardy* trees belonging to the order Taxaceæ, which warrant their being enumerated here, more especially as it is expected that some of them may yet become valuable both as timber and ornamental trees in the climate of Britain. Such as have been known to give such promise by standing in the open air in this country with a slight protection only, are here detailed.

PODOCARPUS, *L'Heritier*.—A genus very closely allied to *Taxus* and not long detached from it, comprising lofty trees, natives of China, Japan, South America, New Holland, the Cape of Good Hope, and the East Indies.

P. macrophyllus, Sweet (broad-leaved Japan Yew). Introduced into the Kew Gardens in 1804. Leaves scattered over the branches, not comb-like as in the common Yew, and pointless. A lofty and at the same time a spreading tree, growing in Japan, producing wood which resists the attacks of the worm, and is consequently prized for cabinet-work. A plant against a wall in the garden of the Horticultural Society, Chiswick, is from five feet to six feet high.

P. spinulosus, Sprengel (spinous-pointed Yew).—Leaves opposite, whorled, and lanceolate. A native of Port Jackson and adjoining districts, growing in England against a wall, at the rate of three inches in a season.

P. nucifer, Persoon (nut-bearing Japan

Yew).—A species bearing a striking resemblance to the deciduous eypress, having the leaves in two ranks, pointed and lanceolate. A lofty tree, growing in the northern provinces of Japan, Nepal, and Kamaon; but not yet rising freely in Britain. There are specimens at the Haekney nursery, Goldsworth, and White Knights, growing at the rate of four feet in six years. The wood is not equal to that of *P. macrophyllus*, but the plant itself is reckoned hardier.

DACRYDIUM, *Solander*.—The sexes of this are diœcious, so called when they grow apart on different trees. The male solitary, oblong, and the female solitary, borne on the tip of a shoot so as to terminate it. Fruit egg-shaped.

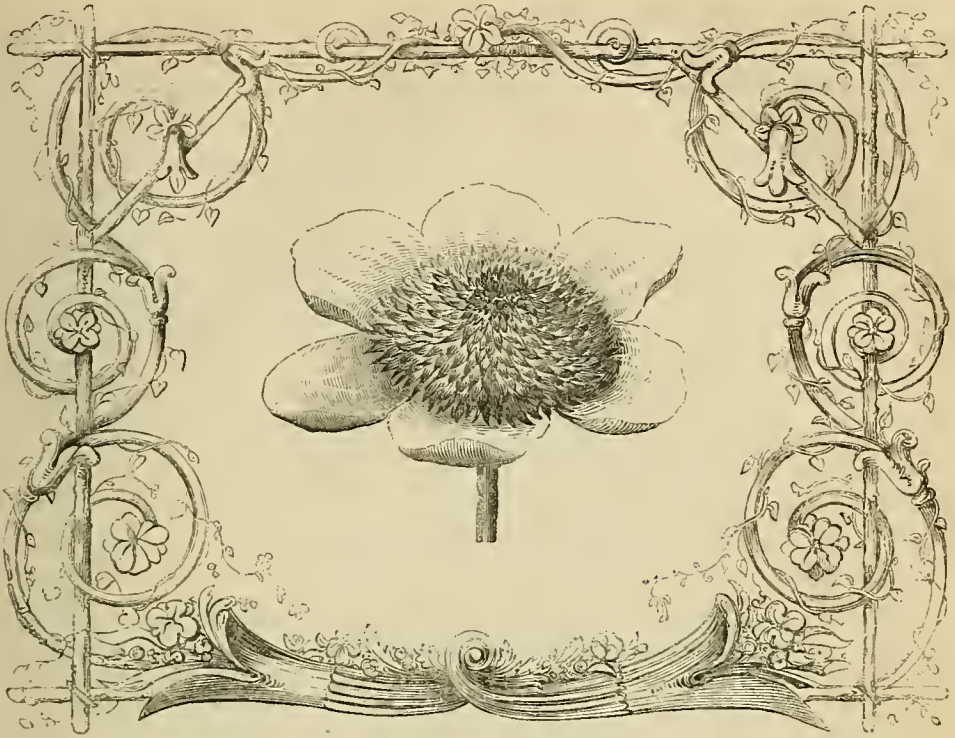
D. cupressinum, Solander (Dimon Pine).—An evergreen graceful tree, with drooping branches, covered with fine spray and leaves, like an arborvitæ, or some varieties of the club moss. Discovered by Dr. Solander, in New Zealand, during Captain Cook's first voyage, and introduced into England in 1825. Captain Cook described it, under the name of the spruce tree, as measuring at the base from six feet to ten feet in girth, and from eighty feet to one hundred feet in height, quite large enough to make a main-mast for a fifty-four gun ship. Bennett adds that "the timber is considered harder than that of any of the New Zealand coniferæ, and is much valued either for planks or spars." There are plants of it in Knight's Exotic Nursery, and at Messrs. Loddiges', where it is propagated along with heatils by cuttings.

D. excelsum, Don (tall Dacrydium).—The loftiest timber tree of New Zealand, attaining a height of from 120 feet to 130 feet, with a trunk of about fifteen feet in diameter. The wood, which is soft, is used by the natives in the construction of canoes.

D. elatum, Wallich (lofty Dacrydium).—Introduced in 1820. Represented to be a lofty evergreen tree, a native of Pulo-Penang. The finest specimen in England is in Knight's Exotic Nursery, Chelsea.

PHYLOCLADUS, *Richard*.—A genus called monœcious, having the one sex in one flower, and the other sex in a different flower. The fruit bears a close resemblance to those of *Taxus*, and the leaves have an obvious alliance to those of the *Salisburia*.

P. trichomanoides, Don (Trichomanes-like Phyllocladus).—Represented to be a large tree of graceful regular growth, like a silver fir, seventy feet high and fifteen feet in circumference, furnishing very valuable timber for ship-building, but rather too hard to be generally applied in house carpentry. This plant is at present exceedingly rare in England. Its leaves are of an irregular wedge-shaped figure.



GLENNY ON THE ANEMONE,

ITS CULTURE AND MANAGEMENT.

THERE are very few subjects treated worse than the Anemone in this country. It is perished in the tuber or dry root, planted at a given time, bloomed, if it presumes to bloom, and taken up again to dry; and after being stored a given time, again planted, to undergo the same routine over and over again. And people wonder that they cannot make sure of a good bloom year after year, as if the plant had a fair chance. The Anemone has been known, at any rate in our practice, to continue green the year round; and they ought not, under any circumstances, to be taken up while the foliage is green, for they will frequently maintain their bloom nearly all the winter through, and exhibit something like a constant growth and constant flowering for years. A bed of Anemones planted in October will be up the same autumn if it be mild, and with light litter to protect them through the hardest frost, will bloom early in the spring, and continue flowering for a long period, at least partially; and unless the leaves turn brown and decay, we should certainly not disturb them. There are single and semi-double of the florist's Anemone as well as double ones, and the most strange thing is, that the double one has nothing in common with the single and semi-

double kinds. The single varieties are cupped like a tulip, but the seed vessel is large and black; when these have two or three rows of petals one within the other, they are called semi-double; but the double ones are like a flat dish formed with the petals, and the centre is filled with a cone of florets totally unlike the petals, and forming a mass of a different colour. We should like to see the florist labouring hard to procure a double one from the semi-double kinds, that is to say, by multiplying the rows of petals until they fill up the flower like a ranunculus, and cover the seed-vessel altogether. The propagation of the Anemone from seed gives us the advantage of new varieties, but they rapidly increase by the root alone, and thus perpetuate those varieties already raised, and worth it. We must treat of these methods separately; and first, we will speak of raising from seed. The best way to commence this is to pick out from some nursery collection some of the brightest and best flowers, that is to say, varieties with thick broad petals, forming a cup like a tulip, of half a hollow ball, with as many rows of petals as you can find; but if there be any very brilliant and striking colour, it must not be lost sight of because it is quite single, because it will help to diversify the seedlings to

be raised from the selection, therefore any flower that is very bright and moderately formed, any that is very large, very thick petalled, or with more than one row of them, may be marked as desirable, taken up with a good ball of earth, and carefully removed to the place you mean to grow them in. They should be replanted in rich soil without disturbing the roots. If this be done well, and each plant be covered with a large flower-pot, with the hole stopped up, to keep off the sun and wind the first day or two, the chance will be in favour of your saving seed the first season; we ought, however, to begin watching the beds from which we make the selection, from the time the first flowers open, and to remove those we desire to possess as soon as we can discover them, before any of their flowers are wasted. The seed is woolly and attached but slightly, so that the plants want constant watching, or the wind would blow it away altogether, like the seed of a thistle. The bed therefore should be picked over daily when the seed begins to ripen, and in very dry hot weather, twice a day, for it is not well to pick off the heads of seed before they begin to loosen. The seed as picked off should be put into a box rather deep, to prevent it blowing out again, for the seed will all disengage itself after gathering, the same as it would on the plant, and the box then secures it; some put it in bags, but this should not be, till it is thoroughly dried. The seed thus saved from good picked flowers will at least afford a chance of better another year; and the plan, which is not a bad one, of sowing seed directly it is gathered, answers pretty well, except in very severe winters; but there is danger of losing the plants while they are so small, as they must of necessity be when only sown two or three months before a winter usually commences. When common Anemones are raised for mixtures, the roots of which are to be sold by weight for common border flowers, little else is done than to rake a border or bed even, rub the seed out in earth or sand, sow it as evenly as possible all over, and rake it in as you would onion or turnip seed. Here it remains with occasional watering, and the bed kept clear from weeds (which spring up sooner and stronger than the Anemones), until they flower, simply covering them with open litter, such as peashaulm, long broken straw, or other lightly lying stuff, that will keep off wind and frost whenever either prevails. But with choice seed, to which we look for something valuable, and of which we can hardly afford to lose a grain, lest it should be the best, we prefer sowing in spring, according to the following plan. The seed of the Anemone is attached to a woolly substance that renders it difficult

to separate, unless it be rubbed in dry sand or earth, but when mixed with this it separates easily, and is ready for sowing. There are those who sow in boxes, but as the plant is hardy, all that is necessary is to provide a good rich loamy bed, not too strong, rake it very level, and sow the seeds very thinly all over it, then sift some mould finely over it, to cover every seed, but not too much. Here they may take their chance with all the weather, until they come up, when they must be occasionally watered and weeded, for to allow weeds to grow up among them would be to retard their growth, and in all probability kill any that were weakly, and these are mostly the best. The importance, therefore, of removing the weeds must be obvious. If the seed has been sown pretty well, and is evenly distributed over the bed, the only thing required is this continual watching and destroying the weeds. We have more than once raised the seedlings, and never removed them till they bloomed, but every plant was about two inches from any other, and a large breadth was sown too. It was by well mixing the seed with three times its bulk of silver sand, and then carefully spreading it well, that we got it thin and sufficiently distant. One bed continued partially blooming from the autumn through a mild winter, and in spring we removed the best with a trowel, after well watering them, and planted them without disturbing the roots, in a bed six inches apart every way, and here they remained two whole seasons before the foliage decayed. We continued removing the best from the seed bed from time to time, so long as there were any worth removing. During all this time the weeds were pulled up as fast as they appeared and got large enough to be taken hold of, and some of the weakest and smallest in the first instance proved the best when they became matured. By mixing the seed with silver sand and rubbing it well to separate it among the sand, the whiteness of the sand shows where the seed lies, and enables us to scatter it evenly, which is not the case where it is separated in mould, as it all appears of a colour with the bed we are sowing it upon, and we cannot see where it lies. Of course we advocate the practice we found so successful. When the foliage turns yellow or brown and decays, the roots may be safely lifted and dried in the shade, but as they are all supposed to be different varieties, that is, have been selected for something good in quality, and seedlings are, when good and distinct, worth naming, every root, or rather, patch of roots, for in a summer or two they become so, must be kept in a bag by itself, with its number or name; but if the intention is to keep them as mixtures, this trouble

is unnecessary, they may be all thrown together at once. It should, however, be recollected that the value of a florist's flower is greatly deteriorated by mixing, and that in selecting seedlings, we should be guided by those properties which enhance the beauty of a variety, and thus improve on what we have; but the Anemone, single and semi-double, may be worth saving, though not worth naming and keeping separate; therefore, while in flower, this distinction should be made, and in taking up, those to be kept separate must be bagged, while the others may be thrown together. While these are out of the ground they must be preserved from damp, which very soon destroys them, and from heat, which would shrivel, and if kept up too long, weaken or kill them outright; they require as much care as soft bulbs in this respect, and if you have proper drawers for them, they would be better loose in their several partitions than in bags. While any sort of bulb or tuber, or corm or other root, usually taken up are in store for the winter, they require frequent looking to; and if any damp be perceptible they must be spread and dried, and the bags also dried; and this will suggest also that a place naturally more dry should be selected for them. If, as it will sometimes happen, the foliage should die down or decay the first season, the roots may be taken up, and great care must be taken that they are all obtained, for they may not be very large; and the only way to depend on getting them is to sift the top three inches of mould after you have taken out all you can. In this case they should be planted again in October, because they are not the first year large enough to bear storing so long as when there is more substance. Indeed, even in case of the foliage dying down we should not remove them, unless the ground were very foul, or the space wanted for something else, or it were desirable to change the place in which they are to grow; we should prefer their remaining altogether, the second, if not the third year, merely removing as they come into flower all we intend to retain for their good qualities or remarkable colour, always excepting that we would not even let colour induce us to retain any star-like varieties, for narrow and pointed petals are the bane of floriculture, be they in whatever flower they may.

The roots of the Anemone increase rapidly when in ground that suits them. They are for the most part shapeless brown tubers, the eyes in which are discernible and that is all, and of course, if broken into as many pieces as there are eyes, will make so many plants. It is, however, usual to break them into pieces with one strong and several weaker

eyes, of tuber. These are in general sold by weight in Holland, and although collections are now put up at London seed shops with a root of each of the several varieties, and the sale by weight almost confined to mixtures, the tubers run so uneven in point of size, that unless they are seen, or warranted to be strong enough to bloom, the weight seems to be the more satisfactory mode of disposing of them. The seedling tubers of such as are to be named and propagated should, for the sake of rapid increase, be broken into as many pieces as there are good eyes, so that the pieces are not too small, so as to risk their loss altogether, and they must be planted in a part of the garden where no Anemones have been before, and if possible in fresh loamy compost placed new for the occasion. It is all but impossible to clear the ground of tubers so fragile, and as a very small piece will grow, it would cause other sorts to be mixed with the new ones, which should be kept as distinct as possible. These distinct sorts should be planted in drills, and a label to each sort. Six inches apart is the proper distance for strong roots, but when you come to the smaller ones of each sort they may be three inches only. There should however be a very decided vacancy of six or eight inches between the last of one sort and the first of the next sort, to secure them from being mixed in the taking up. In this bed they may be placed in October, and they need not be taken up until the foliage turns yellow. They will bloom—such of them as are strong enough—by the early spring, and if there be a warm summer the foliage will turn yellow soon after the seed ripens; but if it do not turn yellow, but on the contrary continues growing, on no account disturb them. They will be all the better for remaining two seasons on the same spot, for unless the plant absolutely rests, which is indicated by the decaying leaves, it weakens the tuber to take it up. When they are taken up they require to be sorted and arranged into blooming roots and unblooming roots (for we treat the words tuber and root as the same thing though botanically it may be incorrect). Some of the largest may break into two or three blooming pieces, and several bits for planting, while many of the small bits of the previous year will have become large enough to flower well. In planting them again in the month of October the same care must be taken to keep them separate, to keep the blooming ones six inches apart, and those that are too small to flower three inches apart. You will shortly find you have a good stock of the varieties you have selected for naming and propagating, and you can let them out among other growers or not as you please. But in the mean time you must have been saving

seed even of your selected seedlings, and sowed it and treated it all through in the same way you treated the first. Every year's seedlings ought to improve your stock by the addition of some novelty, and especially value those which become more double by the multiplying of the rows of petals, for we should like to see an entirely new class of double flowers created as it were by increasing the petals, instead of the mass of florets which distinguish those at present called double flowers. As you procure advances towards this desideratum, those which they beat should be thrown out of collection, for the presence of worse flowers throws back the produce even of a fine one very much. So that in saving seed the best varieties should be chosen, and none that are inferior should be even near them. By year after year saving the seed from the most desirable only, by treating this seed carefully as directed, by selecting each year such alone as beat those you already possess, and carefully seeding from them again, a few years will reward you with a new race of much improved rarities, and perhaps with a distinct new class of double flowers. The general culture of the Anemone for the twelve months round may be thus laid down.

JANUARY.—The plants will, if the winter has been mild, be very strong and growing, easily checked by the frost, and some of the more tender ones especially so. They must be covered in the evening with hoops and mats, or cloths of some kind, or litter to prevent frost and wind from injuring them. It is not too late to put in the ground any tubers that may have been left out, or that you may have procured since planting time, though they will not grow so much in a season as the autumn planted. Seedlings must be weeded carefully if they are up, and if not up, the bed must be kept clear of any rank growing weeds, because they would overrun and destroy the plants as soon as they germinated; and, as we recommend spring sowing for the choice varieties, there should not be any seedlings very young. But all beds must be kept clear of weeds. The earth may be stirred between the rows, and the soil pressed close to the tubers, for the growth of the plants will crack it and prevent its sitting close until it is crumbled and gently pressed. The covering from frost, which should not be put on until the last thing at night in mild weather, should be taken off at sunrise if there be no frost, but if there be, it must remain on altogether until the frost has departed.

FEBRUARY.—Plant the collection for June showing. It is the proper month for the spring planting. The plants still growing fast if the weather be mild, require much the

same attention as last month, and if there have been much wet to close the pores of the surface, the ground may be loosened again and some of the earth drawn close to the plants, in a slight degree earthing them up. Cover from frost still more carefully if possible, as the forwarder the plant, the more danger of a check. Although they are too hardy to be killed they are easily spoiled for the bloom, and the manner in which the flower of double varieties is affected is a kind of blight to the centre, by which the mass of florets is *destroyed*, and the outer petals alone appear, half their usual size and in bad colour. Keep clear of weeds in all cases, and prepare beds for sowing seeds towards the end of the month, that is presuming it is not frosty nor too wet, for the next month will do if the ground be not in order this. The manner of sowing the seed has been mentioned, and it matters little whether in this month, next, or the month after, always excepting that the earlier it is sown the stronger it becomes to stand the winter, and if the weather be favourable there is hardly any interruption to the growth through the winter months; but if they are too small when the frost sets in, some are sure to perish, and these are generally the most valuable, because the further a plant is removed from its natural character, the tenderer it in general becomes, although it may be what is called hardy. It is the young shoots of trees that always suffer in frost and cold drying winds, because they are full of sap, and the juices evaporate when they can least afford to lose them.

MARCH.—If the weather be mild now the blossoms of the Anemone rise pretty rapidly, and many will be in flower before the month is out. The frost and cold winds destroy the texture of the petals and take out the colour; in fact, when thawed again they are spoiled. Those therefore who are at all anxious to preserve the beauty of them should cover them as carefully as they do tulips. In large beds and masses of common sorts few take the trouble, because if one set of blooms perish there are so many ready to succeed them that a day or two of mild weather restores the beauty of the beds, although the first may be entirely swept off. Besides, where they are used with the various early bulbs to make up early bloom for geometrical flower gardens or clumps on a lawn, any preparation for covering would be out of the question, as it would constantly disfigure the place and render it always unsightly, but in nursery beds not connected with the plan of the flower garden and dressed ground, pease-haulm may be kept handy and be placed over them of a night and continued on them while there is any frost. This especially applies to seedlings, every

flower of which we are anxious to preserve as long as we can. Seed ought to be sown this month as before directed, if it be not already sown, and if there be drying winds or frosty weather, mats may be covered over the bed, flat, with a few pegs to keep them down; it keeps the bed moist in dry weather, prevents a scorching sun from drying up the seed as it swells, and hastens the germination. Whatever roots are out of the ground ought to be planted this month at the latest, and they should be planted in drills six inches apart for blooming, and the small ones that will not bloom, three inches. The drills also ought to be six inches from each other, and the tubers should be covered two inches.

APRIL.—This month may be considered the height of the bloom in ordinary seasons, for all the autumn planted; and those planted last month will be growing fast. Many make a practice of planting choice varieties for showing in the spring instead of the autumn, because they should be out of the way of frosts, which it is considered, though erroneously, destroys many of the tubers. This, however, can only happen in very severe winters, and very careless mismanagement. They are as hardy as tulips, and if in well-drained ground, and moderately good soil, are quite as certain in their growth and flower. An ordinary frost will not hurt a bloom before it is opening, and though it may check the growth, and prevent the full development of the usual size, it is as easily counteracted by covering as injury to the tulip. Seedlings require a continuance of former treatment; those which have been covered after sowing, and in coming up, should have all the air that can be given on mild days; and if the season be dry, they should be refreshed with occasional waterings. Seed may still be sown, if it have not all been sown already; it may make sufficient growth to go over the winter, though last month's sowing will be better and stronger, particularly if the season be at all unfavourable. Weeds, and especially if the ground be foul, will now grow fast, and must on no account be allowed to get a-head, not only because they rob the plant of the nutriment it requires, but that their roots also get so entangled with the tubers, as to prevent their being drawn out without disturbing the plants, and among seedlings the plants will actually be drawn out of the ground. The spring planted tubers, the plants of which are now above the ground, require the earth to be stirred on the surface, and crumbled small close to the plants, which, having broken the soil and laid it hollow, would be otherwise greatly exposed to the weather.

MAY.—The spring planted beds will require great attention as to the watering and weed-

ing; and towards the end of the month may be throwing up their blooming stems. Seedlings and small plants must be constantly weeded, for the reasons given before; they are more likely to be injured than the more established plants. The bloom of the autumn planted will begin to decline fast, and if the weather be fine, warm, and open, will begin to perfect their seed pods. It would be well to cut off all the pods of the smaller and later flowers, and reserve the finer ones only, as the general quality of the seed will be better for being divested of the remainder. The entire collection may now take their chance as to frosts, but if you have a desire to preserve the bloom of the spring planted ones, and your best collection is hooped, so that mats can be easily thrown over, they may be covered the same as tulips are from the heat of the sun, as it very much shortens the season of flowering to let them have it always. Unless, however, the season has been very favourable, they will hardly be forward enough to hurt by sunshine till next month. Weeds, the greatest of all enemies to all subjects that are planted shallow, must be jealously watched, for the reasons we have given before. Watering also must be attended to, and this should be done before or after the sun attains any power. It has been said by many, and acted upon by more, that it matters not whether the sun is out or not, because all the flowers and plants in a garden seem refreshed by a shower, even if the sun comes out as hot as it ever does after it; but the argument is bad, because when there is a shower the whole earth is wetted; and that is not all—the whole atmosphere itself is humid, so that independently of the rain, the air being already saturated with wet, there is much less evaporation from the plants; but next in benefit to a shower of rain is a thorough good soaking with water, not on the plants merely, but all over the garden, and the only way to do this effectually is by means of a garden engine, or syringe, playing all over it.

JUNE.—The strong plants put in the ground in February will now be in full bloom, and watering, which they will require in hot weather, must be done between the rows, and in great plenty; the bed should be regularly and completely soaked, and the best way to do this, is to use the pot without the rose on it. When a bed is thoroughly soaked, the damp arising from it does the foliage more good than wetting it on the surface; but, in this case, we have to avoid wetting the flowers, which are really damaged by it, not that they are much hurt by a shower of rain, for the flowers close in general before rain. If you are blooming for show cut off the small side buds that are rising, and only retain two of

the principal flower stems: this will not only strengthen the bloom of the principal stems, but it will also assist the roots or tubers in their growth; for although the growth of foliage is necessary to the increase of a root, the flowering, and fruiting, or seeding of anything is the reverse. On this account it is usual, in growing the off-sets of bulbs, such as hyacinths, to pick off all the pips of the spike of bloom but the top one, which is considered enough to form a kind of leader for the sap of the stem, which, if picked off or broken, might bleed and rot the heart. The flowers of the Anemone should be shaded, the same as those of tulips, all the heat of the day, but it is generally done by hoops and cloths, instead of a stage like the tulip bed. Pay constant attention to weeding, for the neglect of this for a few days would almost overrun them in growing weather. Examine the seed pods of the early blossomed ones, and pick them daily if necessary; they should be picked the instant they begin to loosen, which is easily seen, and if not taken in time, would blow all away in a few minutes; directly therefore they begin to fall, loosen, or appear disturbed, they ought to be picked off, and in hot weather they must be examined two or three times a day.

JULY.—Towards the end of the month the foliage of the earliest may begin to turn yellow and decay; and, if so, they must be taken up directly, because the roots would be found in good order, and if left in the ground a few days, a shower or two of rain would start them into fresh growth, and then they must of necessity be left to go on again another season. The later blooming ones will have gone off and begun to swell the seeds; or it may be, if hot weather, they have actually begun to ripen: the treatment must be the same as has been already recommended for the earlier ones. Seedlings must be weeded still, and if they are too thick in the seed bed, they must be thinned; the easiest way to do this is to water the bed till it is as soft as mud, they may then be pulled or lifted out with a piece of stick, and planted three inches apart in a new bed, and enough should be removed to leave them on the seed bed not more than two inches apart; but if the sowing has been moderately thin, the bed should not be disturbed much; it is only when there are little thick patches about that the places where they are too thick should be thinned. This applies to the beds that were sown in the spring, and in which the plants are now large enough to handle well. If these seedlings begin turning yellow, take them all up and replant them soon afterwards, as the smallness of the tubers makes them liable to dry up and lose their vegetating power. They should be dried in

the shade to get rid of the extreme moisture which, in store, would subject them to mildew, and then be laid by in boxes for a month or two at the most; but it is to be understood that if they were removed from one bed and immediately planted in another, no harm would come of it; on the contrary, they would soon vegetate again, and be progressing towards maturity.

AUGUST.—All whose leaves have turned yellow should be taken up, and the larger ones dried and laid by; the small bits may be planted again directly in fresh beds, and at the proper distances according to their size; three inches is enough distance in the row, and the rows six inches apart. Those that continue growing must not be disturbed, but they must be weeded regularly, and also watered when they require it, for it would injure them greatly, when once they had started their fresh growth, to let them suffer for want of nourishment. In digging up Anemones there ought to be the greatest pains taken to get out every small bit of tuber, and after all has been done that could be done by hand, the earth, within two or three inches of the surface, ought to be sifted and picked, and the bits found thrown among the mixtures. The beds intended for October planting should be dug, and the earth thrown out on each side to sweeten; it should also be turned over two or three times, and picked clear of wire worm, grub, or other enemy. As the flowers go off of the best beds, and the foliage indicates drying, the rain should be kept off to prevent the fresh growth of the tubers commencing before the other was done.

SEPTEMBER.—There is no treatment required this month at all different to that previously mentioned, if there be any plants now growing; and as for the most part they will be in store, they should be occasionally examined to see that no mouldiness appear; if there be, they should be brushed dry and laid in the dry a while before they are returned to their boxes or bags, for the mouldiness would soon destroy them if neglected.

OCTOBER.—This month, the quantity intended to bloom early should be planted. At the commencement the soil should be turned over for the last time, and mixed with as much cow dung properly rotted as would have laid three inches thick over the whole bed, and be well incorporated with the ordinary soil. We are presuming that the ground all over the garden is properly drained, and if not, it should be done, for it is morally impossible to grow these plants well in a soil in which the water lies, and although it is not always so considered, and many plants and flowers grow in spite of ill usage, all things would progress better for draining the soil. The beds should

be at least eighteen inches deep; and many put two or three inches of rotten dung at the bottom. The soil being well mixed and returned to the beds, should be allowed to settle down a little, for it will stand a good deal higher than it ought, at first. In a fortnight or so it will have so far settled down as to be in no farther danger of sinking. The surface may now be levelled, and lines drawn along the bed from end to end, and quite tight; drills should be drawn three inches deep, and the tubers placed six inches apart in the bottom; the earth should be drawn upon them and gently pressed, so that they be covered a good two inches, or at first a trifle more, say three inches, because the rains which fall and wash the surface will lessen its depth. Here they may remain without any farther attention except the removal of weeds, if any come up. We have invariably had the beds four feet wide, and containing seven drills, with alleys two feet wide between. They are convenient, because we can reach to the middle row from either alley, and for appearance they can hardly be improved, besides which, they are as wide as can be conveniently covered. If there be any whose foliage has decayed, and their tubers are not yet taken up, no time should be lost in doing it, and those so delayed will make the best bloomers for the spring planting.

NOVEMBER.—The directions for this month would be the same as last in every respect, so far as they would apply; for instance, tubers that should have been planted last month would require to be planted this, and the same directions would be applicable. Any that ought to have been taken up and were neglected, would want to be taken up now and carefully dried for storing within boxes and bags. The necessity for weeding where weeds were troublesome, and of watering if the month were hot and the winds parching, will be obvious; and if there be any small tubers among those intended for spring planting, the small ones ought to be parted now, as they are better in than out of the ground. Examining the tubers for spring planting, and attending to mildew and damp, and their removal, is a subject of importance, and ought never to be omitted while you have tubers in stock.

DECEMBER.—As the planted tubers will, if the weather has been mild, be now through the ground, you must provide some covering, either loose litter of some kind, or hoops to enable you to throw mats or cloths over, so that the sudden frost may not injure them. This covering may be put on at night, and if it be frosty remain on during the day; the cloth should be transparent, for the obscurity of light is always more or less injurious to growing plants. The covering, therefore,

should admit the light, though not the air, if it be over hoops; but litter like peashaulm, which touches the earth itself, and surrounds the plants, protects them against wind, and keeps the natural warmth of the ground from going off; nor does it exclude the light altogether, and even in a long frost it so tempers the weather, or the effects of it, as to render the plants essential service. When covered with cloth over hoops, the cloth should be pegged down to the ground, and the hoops should be very shallow, because the less room there is between the ground and the top, the better for the subjects under it. The ground should be turned out of the beds for spring planting, eighteen inches deep, and the soil laid on two ridges, one on each side the bed; here they should, during this month, be turned several times, and before sowing, it should be dressed or mixed with cow dung as directed for spring planting, so also should the bottom of the bed be dunged as before mentioned. If there be frosts, and the soil gets occasionally frozen, so much the better, for frost always opens the ground and ameliorates the soil. As soon as a thaw takes place the soil should be turned over again, that another surface may be exposed to the weather.

As general instructions, the winter months should be taken advantage of for the collection of composts, and turves to be rotted into compost, and leaves to rot into vegetable mould, which, if the loam were taken from below the turves instead of being rotted turves themselves, would require leaf mould to compensate for the absence of the large proportion of vegetable mould that forms out of the turves and the roots when rotted; the making of tallies or labels to mark the various kinds, and otherwise preparing for the more active summer duties.

With regard to the properties of the *Anemone* there is no more known than there was a few years ago known about other florists' flowers. It is true there had been something published, something professing to be the criterion of a good flower of the sort treated of, but it was as indefinite and ridiculous as could well be imagined. We have the same thing published of the *Anemone*, the same indefinite, groundless, and useless conditions, adopted without a principle to build them on, and put forward without any regard to whether it could make a flower better or worse: for instance, take Mr. Loudon as the authority, because his is the best, and we have the following criterion of a fine double *Anemone*:—"The stem should be strong, elastic, and erect, not less than nine inches high. The bloom or corolla should be at least two inches and a half in diameter, consisting of an exterior row of large substantial well-rounded petals or guard leaves, at

first horizontally extended, and then turning a little upwards, so as to form a broad shallow cup, the interior part of which should contain a great number of long small petals imbricating each other, and rather reverting from the centre of the blossom. There are a great number of small slender stamens intermixed with these petals, but they are short and not easily discernible. The colour should be clear and distinct, when diversified in the same flower, or brilliant and striking if it consists of only one colour, as blue, crimson, or scarlet, &c., in which case the bottom of the broad exterior petals is generally white; but the beauty and contrast is considerably increased when both the exterior and interior petals are regularly marked with alternate blue and white, &c., or stripes, which in the broad petals should not extend quite to the margin." Such are the properties of the Anemone laid down by our predecessors, and accompanied with an illustrated wood-cut, in which the outer "well rounded petals" are drawn almost round, and forming much such a shaped flower as if six shillings were placed round half-a-crown. We may be told some day, as Mr. Wood has told the public with regard to carnations, that the properties (of the Anemone) have been published years before we wrote; and so they have been, but we hesitate not to say that the properties as laid down above have been the cause of the flower not having made one step in advance. The "well rounded petals" as they are called, are the worst that could be imagined as to the appearance of the flower, and unless the properties laid down are such as would enhance the beauty, they had better been left alone. Now there can be no good reason for the stem being nine inches long, unless it were for the convenience of large nosegay makers, in which case the Anemone must be set down as a flower very fit for bunching, and of no sort of importance as a florist's flower. Now it does so happen, that the more dwarf an Anemone is the better it is in appearance; six inches for a flower stem would look infinitely better than nine, but for real beauty the more nearly the flower is down upon the foliage, the better the bed must look, and the richer the contrast. Then, so far from their being well rounded petals, there could not be a worse fault. The flower itself should be circular, and not even show any indentation where they lap over each other, whereas your well rounded petals would show the division half way into the centre, and there is no getting out of this, because there is the specimen of the perfection before us with the actual division between the petals indented more than half; otherwise it might have been said, and would have been said, that well rounded petals meant that the flower was

to be well rounded. And this point, the outline of a flower, is by far the most important. Then, all the other essential points are lost sight of so completely that it would be quite possible for a flower to be in every respect up to the silly standard laid down here, and yet not be worth growing at all. Now the petals ought to be thick and lie flat, the colour ought to be dense without regard to brightness, for colour is a matter of taste alone, and a Waterloo blue would be as valuable as a bright one, a sky-blue as much so as either. Then with regard to the florets that compose the centre or cone of which the double only are possessed, they should be as large as possible, the larger the better, and they should form a half ball, laid on a flat round disk. If we descend to colour at all, it would be desirable to have the centre a totally different colour to the broad petals, and thus present a contrast; then again, if there be stripes, or blotches, or marks, they should be well defined, but it will strike any one upon reflection, that a flower might be right up to the criterion of a good double Anemone, and yet show the six deep divisions of the petals, which alone render it worthless, and have thin flimsy petals which form another fatal blemish; it may have a flat poor centre, which is a third fault. Now any one of these three faults would make a flower good for nothing, and yet might be prevailing to any extent in a specimen in every way answering the description laid down as the criterion of a fine double Anemone. We presume, that as we lay down very distinctly the properties required for a perfect anemone, and do not anticipate any speedy approach to it; those who are so fond of pretending that every thing was known beforehand, will carefully peruse Mr. Loudon's criterion, and then tell us how much it contains that they find in the properties of flowers as laid down by us. The truth is, that not one flower was properly defined; not a solitary instance of a criterion founded upon a sound principle can be urged with regard to florists' flowers and plants, and on this occasion we have produced the best criterion there was to show how utterly useless and worthless it was. People may talk as they like about what cannot be reached, but we have reversed the order of things, and purposely set up a test which is unapproachable, and had in view only what would make things perfect.

In choosing Anemones new for a collection we have already recommended the course to pursue with regard to the single and some double varieties, but with regard to what are called double, which we nevertheless think an improper name, there are some favourites which may be commenced with, but they are

all far behind what they should be, and so equal, that after taking a dozen each of the following, one each may be taken of any of the Dutch kinds, for at present they excel us in the culture of the (so called) double anemone. Those we should choose would be

Josephine, bright scarlet and fine centre.

Cramoise Royal, fine red ditto.

Rose surpassante, fine rose ditto.

Couleur de sang, fine crimson ditto.

Azure incomparable, fine blue ditto.

Celestina, dark blue or purple ditto.

High Admiral, scarlet ditto.

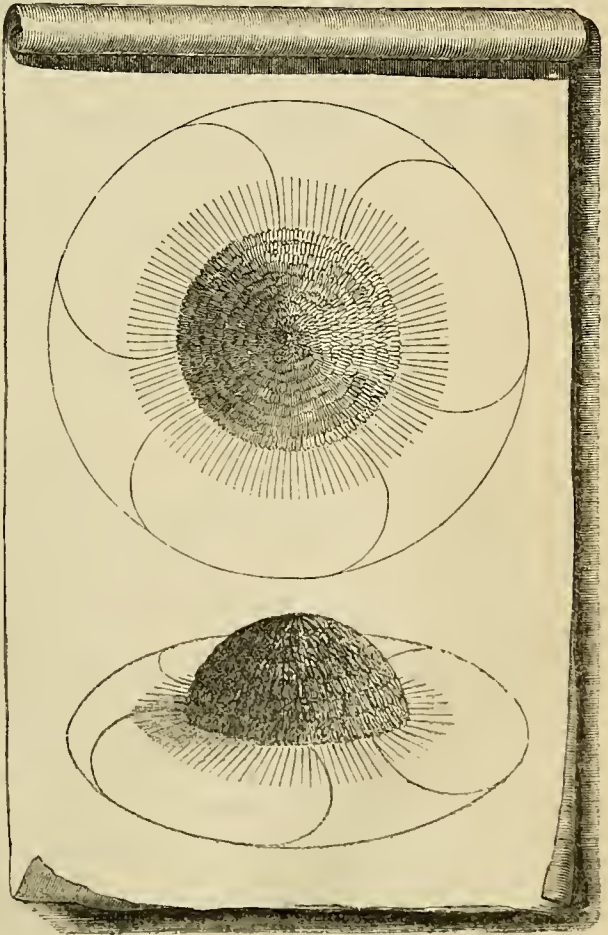
Scarlet superbe, splendid scarlet ditto.

Beyond these we should only have one each of as many varieties as were described double : some will be found worth propagating separately, but the majority may be thrown into

mixtures. Still the flower has been comparatively but little cultivated as a florist's flower, so that the distinct varieties have not been paid much attention to. On this account, therefore, and taking into consideration the cheapness of the flower as imported in collections, it would be unwise to omit any with a moderately good character, though it would be quite as unwise to buy more than one of a sort until they were tried. Many will be found to vary so little as not to be worth keeping ; in this case the best of a particular colour or shade ought to be kept, and all others that are too near it should be thrown out as border flowers, or mixtures. There may be found among a collection some even better than those we have mentioned, but not even known in this country.

THE PROPERTIES OF THE ANEMONE.

We shall, notwithstanding all the gaudy varieties which are cultivated in our gardens, treat the Anemone as one quite worthy of being elevated to the distinction of a florist's flower. The single ones are beautiful in a border or a clump; they bloom early in the spring, late in the summer, and even all through a moderate winter, if they are managed well for succession. The flowers are bright and abundant, and nothing can well beat them in appearance during the untoward season in which they bloom. The single ones have, for the most part, the finest made petals, and we have seen the flower cupped like a tulip, and even as large as some tulips. The so-called double varieties are not properly so called, because they have but a single row of petals, and a crowded fuzzy centre of small florets. These also are pretty border flowers, but they are not so hardy nor so constant as their single brethren; nor are they much better representatives of double flowers than they are of single ones, inasmuch as we require petals instead of florets to constitute a proper double flower. It is from the single ones we should breed ; and when they come, as some will, with two rows of petals, we should breed from these until we increase the number of rows of petals sufficiently to reach the centre. We shall be told this is impossible—be it so. We remember, however, to have seen in the year 1841 a beautiful collection of seedlings, some with as many as four rows of petals, smooth, thick, even and bright ; and, as some of that seed was distributed, we hope if any body has been fortunate to bring good flowers, and save seed,



they will be good enough to send us a pinch. We regarded those seedlings as a race from which double flowers might be one day produced. As it is, there are two classes of flowers, the single, with a seed vessel and anthers; and what we shall call the single, with a centre of florets, falsely called double; there is a third class, which are properly called semi-double, on account of their having two, three, or four rows of petals. And, as every thing must have a beginning, and "a thing well begun, is more than half done," we will give the properties of each, that those who buy or raise seedlings may have some guide to enable them to select the best varieties.

THE SINGLE ANEMONE.

THE petals should be broad and thick, smooth at the edges, slightly cupped, forming no indentation where they lap over or join. The flower should therefore be a very shallow round saucer; the colour bright and distinct, the anthers and seed vessel small; the flower large; the stem stiff and elastic, and no matter of what length, because, if they bloomed close to the foliage, the flower would be as handsome as if it were a foot from the ground.

THE (SO CALLED) DOUBLE ANEMONE.

THE petals should be flat, but not reflexed, and one half of the shallow cup or saucer which it forms, should be occupied by coloured florets of the form of half a globe, all pointing to the edge of the flower, and away from the centre. They should differ in colour from the petals, and the more they are contrasted, the better they are. We have said nothing about the choice of colours in either of these classes of flowers, because it depends on taste; but whatever colours they are, they should be dense and decided, as if the petals were formed of coloured matter throughout, and not merely stained on the surface.

THE TRUE DOUBLE ANEMONE.

THERE should be as many rows of petals as would form a good double flower, displaying some of the inside surface of every row, and the inner row should cover in the seed vessel in the centre. The petals should be thick, broad, free from notch or serrature, and in all respects like those described first. They should all imbricate, that is, the second row of petals should exactly cover the divisions of the first, and the third should cover the divisions of the second, and so on. The flowers should be two inches across when expanded, and rise well up in the centre.

The sporting of the anemone into two kinds of flowers has been the subject of much speculation. The dahlia gives occasionally flowers after the like fashion, that is, one row of petals

forming a sort of disk, and a centre filled with florets. At one time this style of flower used to be cultivated and esteemed, but after the publication of Glenny's Properties of the Dahlia, which condemned them, they are no longer grown, and it has been said that Messrs. Young, of Epsom, lost a hundred pounds, which they had expended on such varieties just before the condemnation appeared. The only double kinds ever grown were made up of petals.

The *Camellia Japonica* sports, like the anemone. Double flowers of two kinds may be found of several colours. *Altheaflora* has a single row of petals, and a centre formed of florets, and there are many that partake more or less of the character, while others come exceedingly double that are formed of petals only.

The Hollyhock is sportive, in some measure like the anemone, throwing flowers with one row of petals, forming a dish, and florets of all shapes, forming a confused heap in the centre. The hollyhock is, however, unlike the dahlia, anemone, and camellia in one particular; there are no double ones formed of distinct rows of petals, and the fructification differs widely from all, for that is like the mallow.

Anemones depend greatly on the care bestowed while they are out of ground. No root is more apt to damage by damp, and on the slightest appearance of mouldiness or mildew, they ought to be brushed, dried, and placed in very dry sand. They ought also to be kept in a very dry place.

The seed of anemone are, up to a given period, pretty safe on the stem; they burst, however, like cotton, and when one gets away, the wind will clear the whole pod in a few minutes. They require constant watching, in order to secure the whole quantity of seed.

Anemone tubers are variously sold; they used to be purchased by weight only, but of late, the foreign seed warehouses send them over by name, and count the tubers. This, however, leads to the breaking up of the tubers into pieces too small to bloom well. We observe nearly all the seed shops sell named varieties at per dozen, or hundred, instead of per pound.

It has been erroneously stated, that one of the fine double varieties, neglected for a time, will go back to a single flower, and it has been inferred from this, or rather it has been asserted by the same writer, that the single becomes double by cultivation only, and that by neglect it will go back again; this is not the fact, a plant may be starved so much that the plant will not half develope its bloom—it may come with scarcely any centre; but a double one will never become like a single one.



AND FLOWERING PLANTS

LESCHENAULTIA ARCUATA, *De Vriese* (drooping *Leschenaultia*). — Goodeniaceæ § Goodeniaceæ. — A low, half-shrubby plant, the main branches of which are spreading, and curve downwards; and the ends of the young branches become arched as soon as the flower buds are developed; the leaves are small, filiform, and scattered; the copious flowers consist of a short tube, swollen on one side, and dividing into five segments, three of which are larger than the rest, broad, obovate, and cleft at the end, of a sulphur yellow colour; the other two are smaller, closing over the stamens, and of a red purple colour. It is a native of the Swan River colony, Australia. Introduced about 1845, by Messrs. Lucombe, Pinee, and Co. Flowers in August and September. *Culture*. — Requires a greenhouse; light turfy peat soil; propagated by young cuttings in sand, under bell glasses; must be carefully watered. (1)

EUCALYPTUS PRIESSIANA, *Schauer* (Dr. Priess's *Eucalyptus*). — Myrtaceæ § Leptospermeæ. — A handsome tree-like shrub, growing erect, five to eight feet high, with reddish four-angled branches, and opposite elliptical vertical leaves, which are fragrant like those of the myrtle, and dark green margined with red: the flowers of this genus consist chiefly of an annular bunch of stamens; in this plant, they are an inch across, with very numerous yellow stamens, and they grow together in threes, on short stalks from the axils of the leaves. A native of Western Australia. Introduced to the Kew garden in 1845. Flowers in the summer months. *Culture*. — Requires a cool greenhouse, sandy loam and peat; propagated by half ripened cuttings in sand, under bell glasses. (2)

CŒLOGYNE OCHIRACEA, *Lindley* (oehre spotted *Cœlogyne*). — Orchidaceæ § Epidendrea-Cœlogyridæ. — A small epiphytal plant,

with small oblong pseudo-bulbs, from the top of which grow two or three lance-shaped leaves, and flower stems about a foot high springing from their base; these stems are nearly erect, terminated by a raceme of five or six moderate sized flowers, pure white in the sepals and petals, with bright orange-coloured blotches on the lip, and extremely sweet scented. A native of various parts of the East Indies. Introduced in 1845. Flowers in March and April. *Culture*. — Requires a hot moist stove, and to be fixed to a block or planted in an open pot or basket; propagated by division of the plant. (3)

XIPHIDIUM GIGANTEUM, *Lindley* (gigantic *Xiphidium*). — Liliaceæ § Wachendorfeæ. — A large herbaceous Iris-like perennial plant, which when in flower is nearly four feet high; the leaves are two feet long and upwards, and between two and three inches wide; the blossoms are small, white, smooth, and arranged in one-sided racemes, closely covering the very strong axis of inflorescence. A native of Caraccas, whence it was introduced to Syon, the residence of the Duke of Northumberland. Introduced in 1844 (?) Flowers in October. *Culture*. — Requires a stove; loam, peat, and sand equal parts; propagated by division of the plant. (4)

SCUTELLARIA INCARNATA, *Ventenat* (flesh-coloured Skull-cap). — Lamiaceæ § Scutellareæ. — A sub-shrubby plant, growing a foot and a half high, with erect slender branches, opposite ovate coarsely serrated leaves, and terminal racemes of numerous flowers: the flowers are of the labiate form, and of a deep purplish rose colour, and appear very ornamental. Found on the western declivities of the Andes. Introduced in 1845, by Messrs. Veitch. Flowers in July and August. *Culture*. — Requires a greenhouse, or is probably suited for flower beds in summer; light,

loamy soil ; propagates readily by cuttings in a slight heat. (5)

POTENTILLA ATROSANGUINEA, var. *Macnabiana* (Mr. M'Nab's Cinquefoil).—Rosaceæ § Potentillidæ.—A hardy herbaceous perennial, growing between two and three feet high, and often flowering at a much less height ; it has strawberry-like leaves, and brilliant orange-scarlet rosaceous flowers, of large size, and a fine rounded cup-shaped form. It is a garden hybrid, raised between *P. atrosanguinea*, and *P. leucochroa*, in 1844, by Mr. Menzies of Halifax. Flowers during the summer. *Culture*.—Grows readily in common garden soil ; propagated by division of the plant, or by seeds. (6)

VANDA BATEMANI, *Lindley* (Mr. Bateman's Vanda).—Orchidaceæ § Vandæ-Sarcanthidæ.—A large epiphytal plant of erect habit, producing sword-shaped, two ranked, curved, hard leaves, averaging two feet in length, and lateral half drooping racemes of flowers, each averaging two inches and a half across, and from twelve to twenty flowers in a spike. The colour of these flowers is very beautiful ; in front they are of a rich golden yellow, spotted all over with crimson, and with a purplish lip ; at the back they are wholly of a vivid purple. A native of the Philippines, and the Moluccas. Introduced about 1844, by Mr. Cumming. Flowers in June and July. It is also known as *Vanda lissochiloides* (Lindley), and *Fieldia lissochiloides* (Gaudichand.) *Culture*.—Requires a hot moist stove ; and should be fixed to a block of wood, or planted in an open basket ; propagated by division of the plant. (7)

ODONTOGLOSSUM HASTILABIUM, *Lindley* (halberd-lipped Odontoglossum).—Orchidaceæ § Vandæ-Brassidæ.—A handsome epiphyte, with oblong compressed pseudo-bulbs, sheathed when young by the bases of two leaves from the axils of one of which the flower stalk rises ; from the top of the pseudo-bulbs spring two linear-oblong obtuse leaves ; the flower stem grows from one to two feet high, bearing a raceme of numerous large handsome highly fragrant flowers ; the sepals and petals are pale green, with numerous purple transverse lines and dots, with a halberd shaped lip, purple at the base, the rest white. A native of woods in South America, between Santa Martha and the Sierra Nevada ; and also in Pamplona, at an elevation of 2,500 feet. Introduced in 1845. Flowers in August. (8)

PASSIFLORA KERMESINA, var. *Lemichéziana*, (M. Lemichez's Passionflower).—Passifloraceæ.—A strong growing climbing plant, with three lobed leaves slightly serrated at the base, re-

sembling those of *P. kermesina*, but larger ; the flowers are very handsome, sweet scented, and growing on large footstalks, frequently in pairs from the axils of the leaves, and produced abundantly on all the young shoots ; they are in the way of those of *P. kermesina*, but are larger and darker coloured, being of a deep crimson shaded with purple, and with wider petals, which remain fully expanded for two days ; the rays are barred alternately with blue and white. A hybrid raised between *P. kermesina*, and *P. alata* (or *P. phoenicea*), by M. Lemichez of Paris. Introduced to this country in 1843, by Messrs. Rollison of Tooting, who bloomed it in 1846. Flowers in September and October, and probably, like its parent, nearly all the year. *Culture*.—Requires a cool stove, or intermediate temperature ; loam and peat ; propagated freely by cuttings placed in a hot-bed. (9)

ZYGOPETALUM TRICOLOR, *Lindley* (three-coloured Zygopetalum).—Orchidaceæ § Vandæ-Maxillaridæ.—A small growing epiphytal plant, with small grass-like foliage, and racemes of seven or eight flowers, which are also quite small ; they are of a pale green colour, with a white lip banded with broken lines of crimson. A native of Guiana. Introduced by Messrs. Loddiges in 1843 (?) Flowers in September. *Culture*.—Requires a moist stove, and to be well elevated in pots of turfy peat soil with good drainage ; propagated by division of the plant. (10)

IMPATIENS PLATYPETALA, *Lindley* (broad-petaled Balsam).—Balsaminaceæ. A herbaceous perennial with a semi-tuberous root, fleshy upright stems growing from one to two feet high, and whorls of oblong, lanceolate, sharply-serrated leaves : the flowers grow from the axils of the leaves, several to each whorl, and are large, flat, of a rich rosy colour, with a deeper eye, and a long spur. A native of Java. Introduced by Messrs. Veitch in 1845. Flowers from June to August. *Culture*.—Requires a hot moist stove when growing, and to be rested dry in winter ; light rich soil ; propagated by cuttings of the young shoots placed in heat. The plant loses its beauty in a dry atmosphere. (11)

HOYA IMPERIALIS, *Lindley* (imperial Hoya).—Asclepiadaceæ § Stapeliæ.—A noble climbing plant with woolly stems, narrow oblong leathery hidden veined leaves, six inches long, and large umbels of magnificent wax-like flowers, three inches in diameter, ivory white and purple in the centre. Like other Asclepiads the stem abounds in a white juice. A native of Borneo, in the territory of the Gumbang Dyaks. Introduced in 1846 by Mr. Low, of Clapton. Time of flowering unknown. *Culture*.—Requires a very hot and moist stove, and to be treated as an epiphyte, being

found in Borneo growing from the decayed parts of trees; propagated by cuttings. (12)

SWAINSONA GREYANA, *Lindley* (Capt. Grey's Swainsona).—Fabaceæ § Papilionaceæ-Galegeæ.—A sub-herbaceous plant of upright habit growing two feet high, with dull brownish hoary pinnated leaves of from five to eight pairs of oblong retuse leaflets; the racemes of flower, which are longer than the leaves, grow from their axils, and are profusely furnished with large rosy-purplish pea-like flowers having a white eye. A native of New Holland on the banks of the Murray. Introduced by Capt. Grey to the Horticultural Society in 1845. Flowers from June to September. *Culture*.—Requires a greenhouse; sandy loam and leaf mould; propagated by cuttings of the young shoots early in summer, and by seeds. (13)

ACACIA MESTA, *Lindley* (mourning Wattle).—Fabaceæ § Mimoseæ - Acaciæ.—A branching shrub, with angulate streaked twigs, clothed with small scattered adpressed phyllodia, of oblong form, and a dull or even black-green, and cylindrical spikes of bottle-brush-like yellow flowers considerably longer than the leaves; they however have, and indeed the whole plant has, a singular dull and mournful appearance. A native of New Holland. Introduced about 1845. Flowers in March and April. It is very nearly allied to *A. verticillata*, and has ever been regarded as a remarkable broad short leaved variety of that species. *Culture*.—Requires a greenhouse; loam and peat; propagated by cuttings in sand, or by seeds. (14)

DENDROBIUM TRIADENIUM, *Lindley* (tuber-cle-lipped Dendrobium).—Orchidaceæ § Malacæ - Dendrobidiæ.—A small epiphytal plant, with a round elongated stem, clothed with ovate-oblong obtuse leaves about two inches and a half long, and furnished with small terminal close racemose panicles of flowers; these are an inch across, transparent, nearly white, with a suffused tinge of rose, and have a violet spot on the end of the petals and lip, and a three-lobed yellow tubercle in the middle of the latter. A native of the East Indies. Introduced in 1845. Flowers in August and September. *Culture*.—Requires a hot moist stove; and to be planted in turfy peat in well drained pots or open baskets; propagated by side shoots and division of the plant. (15)

LYONIA JAMAICENSIS, *D. Don* (Jamaica Lyonia).—Ericaceæ § Ericæ-Andromedidæ.—A moderate sized evergreen shrub, covered in every part with minute scales, most copious on the young branches; the leaves are alternate, ovate-lance-shaped, and slightly serrated; the flowers are white, ovate, with five recurved teeth, and grow from the axils of every leaf,

many together, in a subracemose manner; they are extremely delicate, semi-transparent, and waxy in appearance, and have a honey-like scent. A native of the high mountains of Jamaica. Introduced to Kew about 1844. Flowers freely in June and July. Also called *Andromeda Jamaicensis*, (Swartz,) and believed to be the *Andromeda fasciculata* (Swartz). *Culture*.—Requires a cool frame and protection from frost; rough peaty soil; propagated by layers or cuttings. (16)

SCUTELLARIA VENTENATH *Hooker* (Ventenat's Skull-cap).—Lamiaceæ § Scutellareæ.—A sub-shrubby plant, with erect stems, opposite cordate-ovate, soft, coarsely serrated leaves: the flowers grow in elongated terminal racemes; they are of a bright scarlet colour, and consist of a long and slender tube, divided at the extremity, with the upper lip vaulted. A native of South America, in the mountains near Santa Martha. Introduced in 1845. Flowers from July to September. *Culture*.—Requires a greenhouse, or is probably suited for flower beds in summer; light loamy soil; propagates readily by cuttings in a slight heat. (17)

CLEMATIS TUBULOSA, *Turczan* (tubular flowered Virgin's Bower).—Ranunculaceæ § Clemateæ.—An erect sub-herbaceous plant growing two feet high and slightly branched, with large trifoliate leaves in opposite pairs, and growing on long footstalks: the leaflets are rhomboid-ovate: the flowers, which grow in axillary and terminal corymbs, are pale bluish-purple, consisting of four linear oblong sepals, at first erect, apparently forming a tube, but afterwards becoming reflexed. A native of Northern China. Introduced in 1846. Flowers in July and August. *Culture*.—Requires a greenhouse or frame; free loamy soil; propagated by cuttings or layers. (18)

ESCALONIA ORGANENSIS, *Gardner* (Organ Mountains Escallonia).—Escalloniaceæ.—A small erect branching shrub growing from two to four feet high, with numerous oblong alternated serrated leaves, dark green with a red margin, and terminal cymose panicles of deep rose-coloured flowers consisting of five petals with erect claws resembling a tube, and a horizontal limb—altogether having the appearance of an hypocrateriform corolla. There is a variety with narrower leaves. A native of the Organ Mountains of Brazil. Introduced about 1844. Flowers in June and July. *Culture*.—Probably nearly hardy; requires a free soil of loam and peat; propagated by layers, cuttings, or seeds. (19)

EPIDENDRIUM SUBAQUILUM, *Lindley* (swarthy Epidendrum).—Orchidaceæ § Epidendreæ-Laeliliæ.—A small slender epiphytal plant, with tufted ovate pseudo-bulbs, narrow linear leaves seven or eight inches long, and

small pale dull brownish flowers growing in a sub-panicled scape. A native of Mexico or Guatemala. Introduced in 1845. Flowers in September and October. *Culture*.—Requires a moist stove; to be potted among well drained lumps of turfy peat earth; propagated by division of the plant. (20)

GOMPHOLOBIUM VENUSTUM, *Brown* (graceful Gompholobium).—Leguminaceæ § Papilionaceæ-Podalyricæ.—A small shrubby plant, growing a foot and upwards in height, with slender, somewhat loose branches, and alternate pinnate leaves, composed of eight or ten pairs of very narrow linear leaflets; the flowers are medium sized, butterfly shaped, of a rich rose-purple colour, and grow in terminal corymbs. A native of south-west Australia. Introduced in 1803. Flowers from April to July. *Culture*.—Requires a greenhouse, sandy peat soil, and to be carefully watered; propagated by cuttings in sand under bell glasses, or by seeds. (21)

ALBUCA EXUVIATA, *Ker* (Adder's-skin Albuca).—Liliaceæ § Scilleæ.—A bulbous plant, with few long fleshy, grass-like leaves, channelled above, and a spike of flowers, on a stalk shorter than the leaves; the flowers are divided into six segments, which are white, with a narrow stripe of green down the centre of each. A native of the Cape of Good Hope. Introduced in 1795. Flowers in May and June. Also known as *Anthericum exuviatum* (Jacquin). *Culture*.—Requires a frame or greenhouse, sandy loam, and thorough rest in winter; propagated by off-sets or seeds. (22)

BERBERIS NERVOSA, *Pursh* (nerve-leaved Ash Berberry).—Berberidaceæ § Berberideæ.—An evergreen low shrub, growing from two to three feet high, forming a dense tuft, with large pinnated leaves, formed of from five to eight pairs of ovate pointed and serrated leaflets; the flowers are small, yellow, and grow in dense elongated racemes often from six to eight inches long, and growing from the ends of the shoots; bears round purple berries, which ripen in July. A native of north-west America, near the Columbia. Introduced in 1822. Flowers from October to March. Also called *Berberis glumacea* (Lindley), *Mahonia glumacea* (De Candolle), and *M. nervosa* (Nuttall). *Culture*.—Hardy; will grow in any good soil, but likes peat earth; propagated by layers, or by seeds. (23)

YUCCA FLACCIDA, *Haworth* (flaccid-leaved Adam's Needle).—Liliaceæ § Aloineæ.—A low evergreen shrub, bearing tufts one to two feet high, of long lance-shaped flaccid recurved leaves, with strong thready filaments on the margin; from the centre of these rise the panicles of flowers, from three to five feet high, erect, with short side

branches, and bearing numerous yellowish-white flowers, something like inverted tulips. A native of Georgia. Introduced in 1816. Flowers in July and August. *Culture*.—Hardy, or requiring very slight shelter in exposed places and severe seasons; dry deep light loam; propagated by suckers or side shoots, rarely by seeds. (24)

UROPETALUM SEROTINUM, *Ker* (late-flowering Uropetalum).—Liliaceæ § Scilleæ.—A bulbous plant, with long, narrow, grassy, plaited leaves about a foot long, and a flower stem of nearly the same height, bearing a scattered spike of flowers; the flowers consist of six segments, the three outer reflexed, the inner ones upright and reflexed at the tip, dull yellow, with a bar of brownish orange down the centre of each. A native of Spain, Portugal, and Barbary. Introduced about 1629. Flowers in June and July. Known also as *Scilla serotina* (Gawler), and *Lachenalia serotina* (Willdenow). *Culture*.—Nearly hardy; requires a frame in winter; sandy loam; propagated by off-sets. (25)

WITSENIA CORYMBOSA, *Smith* (corymbose-flowered Witsenia).—Iridaceæ.—An upright plant acquiring with age a woody stem, having sword-shaped leaves arranged in two opposite ranks with sheathing bases, and branching corymbs of flowers; the flower-stems and stalks are flat and two-edged, supporting numerous flowers, composed of slender tubes, with a spreading six-parted border, of a delicate pure blue colour. A native of the Cape of Good Hope. Introduced in 1803. Flowers from June to September. *Culture*.—Requires a greenhouse; equal parts of peat, loam, and sand, good drainage, and very careful watering; propagated by half-ripened cuttings under bell-glasses in a greenhouse. (26)

SERICOCARPUS SOLIDAGINEUS, *Nees* (solidago-like Sericocarpus).—Asteraceæ § Tubulifloræ-Astereæ.—A herbaceous perennial, growing about a foot high, forming a dense compact mass, with linear lance-shaped leaves, and small lilac daisy-like flowers, so copious as to cover the top of the plant. A native of North America. Introduced in 1699. Flowers in August and September. Also known as *Aster solidaginoides* (Willdenow). *Culture*.—Hardy; common soil; propagated by division of the plant. (27)

ASTER AMELLUS, *Linnaeus* (Italian Starwort).—Asteraceæ § Tubulifloræ-Astereæ.—A herbaceous perennial, growing about a foot and a half high, of erect habit, with oblong lance-shaped leaves, and large deep lilac-purple daisy-like flowers, which are borne at the top of the stems, and are very ornamental. A native of the middle of Europe and south of Asia. Introduced in 1596. Flowers in August and September. *Culture*.—Hardy; common soil; propagated by division. (28)

BOTANICAL TERMS,
APPLIED TO THE ELEMENTARY PARTS AND
ORGANS OF PLANTS, &c.

THE different parts of plants, as well as the elementary matter which composes them, are necessarily distinguished by different terms: these and their various modifications, and the different modes in which they are applied, are here briefly explained.

Aculei; the same as *prickles*, which see.

Air cell; a sort of cavity, or opening, existing in the interior of plants, among the tissues of which they are composed; they communicate with the stomates, or breathing pores of plants.

Alburnum; the sap wood of trees, or the outermost and last formed layer of the woody portion of the stem, immediately beneath the bark.

Arbor; a tree, that is a plant with perennial branches, supported on a trunk.

Arborescent; having a tendency to become a tree.

Arbrisseau; the French name for a shrub.

Arbuscula; a little tree, that is, a plant intermediate in size between a shrub and a tree.

Arbustum; a shrub, that is, a plant having perennial branches, but without any supporting trunk.

Ascending axis; a term applied to the main stem of plants, or that part around which the leaves and other appendages are developed.

Barbs; forked hairs occurring on some plants.

Bole; the trunk or stem of a tree.

Bract; a small leaf situated on the peduncle, from the axil of which a flower is developed; or those leaves which are situated between the true leaves and the calyx. In some plants the bracts are coloured and very showy; sometimes they are mere scales, and in other cases they resemble thorns.

Bristles; short stiff hairs, occurring chiefly on the stem.

Buds; scaly bodies, issuing from the axil of the leaves, or extremity of the branches, containing the rudiments of future branches, leaves, and blossoms; they are connected with the stem or branch by means of a short fleshy pedicle, in which the scales originated. The manner in which the incipient parts are folded in the buds is called *æstivation*.

Buisson; a French name for a low, much branched shrub.

Bulbs; scaly bodies analogous to leaf buds, they are usually produced under ground, but sometimes above, and have the power of propagating themselves by developing new bulbs in the axils of the scales. There are two kinds, the tunicated and the naked.

Cambium; the elaborated sap,—a mucous viscid layer, interspersed between the bark and the wood, convertible, and in the vegetable economy converted into tissue, for the formation of new cells or vessels, or into peculiar ingredients of which the cells or vessels may be the repositories.

Caudex; the trunk of a tree which is divisible into two distinct portions:—the caudex ascendens, and caudex descendens, the latter answering to the root, the former to the stem. Caudex repens, is the same as rhizoma.

Caulescant; acquiring a stem.

Cellular tissue; transparent vesicles, the soft pulpy mass composing the succulent parts of plants, and constituting the principal bulk of herbaceous plants, and a notable proportion of many parts even of wooden ones, especially in the younger parts.

Cilia; long hairs forming a fringe like an eye-lash on the margin of any part.

Collet; the point of union between the ascending and descending axis, or the root and stem; it is usually regarded as a very vital part.

Conservative organs; the organs whose functions regard merely the growth and health of the plant, that is, the root, stem, leaves, and stipules.

Cryptogamous; a term signifying hidden marriage, applied to plants without visible flowers, such as ferns, mosses, lichens, seaweeds, and fungi.

Cuticle; a membrane forming the outer covering or scarf skin of plants, found on every part exposed to the air, except the stigma and spongioles, but absent from the surface of plants which live under water. It is usually a delicate body, but is sometimes very hard.

Descending axis; a term applied to the main root of plants.

Ducts; conical tubes, differing from spiral vessels chiefly in not unrolling; their use is a disputed point.

Elementary organs; the membrane and substance of vegetable tissue in its earliest stage of growth.

Epidermis; the cuticle, or outer envelope or integument of plants, extending over their whole surface, except the summit of the pistil, and the spongioles.

Epiphytes; plants which grow upon other plants without drawing any nutriment from them; such as the majority of that singular tribe of plants, the orchids.

Fibre; an exceedingly fine hair-like portion of the tissue of a plant, which separates in one direction only: thus the woody tissue consists of fibres in close contact. The finer parts of roots are also called fibres.

Flower; a terminal bud enveloping the re-

productive organs: it is usually coloured, and as such, known as the ornamental and conspicuous part of the flowering plants.

Fruit; strictly, the ovary arrived at maturity, but practically the term is extended to whatever is combined with the ovary when ripe. The matured ovary, whether esculent or not, of every plant, is regarded as a fruit.

Frutescent (*frutescens*); of a shrub-like nature or habit; *fruticans* has the same meaning.

Frutex; a shrub or plant with perennial branches, but without any trunk or main stem; *fruticulus* signifies a very small shrub.

Fulcra; properly a prop or support, and in this sense correctly applied to tendrils; but by the old botanists it was applied also to scales, stipules, bracts, thorns, hairs, and glands—parts which are not universal, nor all found in any one plant, and therefore not regarded as being essential to the idea of a plant.

Glands; minute processes of firm cellular tissue, situated on the leaves and stems of plants, and supposed to be for the purpose of secretion; their tissue is often harder and more highly coloured than that which surrounds them. There are several kinds, as the stalked, the sessile (warts), papillæ, and the lenticular gland. They are also denominated according to their forms.

Hairs; minute transparent filiform processes, found on different parts of plants, often closely covering the parts where they are met with, but at other times very thinly scattered.

Herb; a plant without a woody stem, producing annual shoots from the surface of the earth.

Intercellular passages; irregular spaces between the cellular tissue. If a parcel of oranges are placed close together on a table, and over them a second and a third tier, a similitude of these intercellular passages, on a large scale, will be seen: this is when the cells are nearly globular, and the pressure trifling; according to the amount of pressure they are submitted to, their capacity diminishes.

Lacuna; a term applied to the *air cells*; it is also used to express the little pits or hollows which occur on the upper surface of the thallus in lichens.

Leaves; the flattened—usually green—expansions of the bark at the base of the leaf buds. Though usually flat and thin, they occur also of various forms; and though usually green, they are sometimes either variegated or coloured.

Ligneous tissue; same as *woody tissue*.

Lymphæducts; same as *ducts*.

Membrane; the thin substance which forms the walls and sides of the cells of cellular tissue, is so called; in fact, a thin skin.

Neck; the collet, which see; also the upper tapering end, in bulbs.

Nectary (*nectarium*); the part of a flower which secretes honey: it is also applied to various little appendages of the petals, which are either inner rows of petals in a state of adhesion to the first row, or modified stamens.

Nectarial; of or belonging to the nectary.

Organs of Vegetation; the organs whose functions affect only the growth and extension of the plant, as the root, stems, leaves, and stipules.

Organs of Fructification; the organs on which the propagation of the plants depends, namely, the bracts, flowers, and seeds.

Papillæ; minute transparent elongated points of the cuticle, covering the surface of the leaves and stems of some plants, as for instance, the ice-plant, the peculiar crystalline excrescences on which are papillæ.

Papule; a term applied to *papillæ*, when much elongated beyond the surface.

Parasite; applied to plants which grow upon other plants, and abstract nutriment from them, as the dodders (*Cuscuta* sp.) do from the plants they attack. Various fungi are parasitical, of which number rank the mildew, the smut, and the rust.

Parenchyma; the same as *cellular tissue*.

Phœnogamous; applied to plants which bear visible flowers, as distinguished from the ferns, mosses, lichens, algæ, fungi, &c., which bear no visible flowers, and are called cryptogamous. Phœnogamous plants, though perhaps, not the most numerous, are the most obvious members of the vegetable kingdom.

Pores; the same as *stomates*.

Prickles (*aculei*); rigid opaque processes, terminating in a sharp point; they are unconnected with the woody fibre, and in this respect differ essentially from thorns: the sharp, sometimes hooked, bodies on the stem of a rose are prickles.

Prosenchyma; a peculiar kind of cellular tissue, in which the individual cells or bladders taper towards each end.

Raphides; small needle-shaped transparent bodies found among the cellular tissue of plants; they are said to be crystals of oxalate of lime.

Reproductive Organs; the organs by whose agency propagation is effected; the same as organs of fructification.

Root (*radix*); the part by which a plant is attached to the soil in which it grows; or to the substance on which it feeds: the descending axis.

Ramenta; scales or scurfiness of a thin foliaceous texture, found sometimes on young shoots, and very numerous on the petioles of ferns.

Seed; the part which contains the embryo;

or more properly, the interior portion of the ripened ovary, containing the rudiments of a new plant.

Shrub; a ligneous or woody plant, of smaller growth than a tree, having perennial branches, but without a distinct trunk.

Spines; indented or pointed processes, connected with the woody tissue, and which do not fall off: many leaves are spiny.

Spiral vessels; fine transparent conical tubes of spirally twisted fibres, which are supposed to be capable of conducting fluids.

Stem; that part of a plant to which the leaves and flowers are attached; the ascending axis.

Stings; slender hair-like organs or processes, containing a secreted acrid venomous fluid, which they discharge when pressed.

Stipules; foliaceous appendages situated at the base of the true leaves of many plants, and often affording a good mark of distinguishing species.

Stomates; small, minute openings or passages through the cuticle, supposed to be organs of exhalation chiefly, but also capable of imbibing such aqueous vapours as may be found floating in the atmosphere.

Tendrils; slender thread-shaped twining organs, by which plants attach themselves either to other plants or to other objects for support.

Thorns; indurated abortive buds, lengthened into sharp pointed processes, which are connected with the woody tissue, and in fact very much resemble branches. Sometimes they bear buds and leaves, as may be often seen in those of the hawthorn.

Tissue; the substances of which plants are composed are called tissues; there are three distinct sorts, cellular, vascular, and woody tissue.

Trachæ; the same as *spiral vessels*.

Tree; a ligneous or woody plant of large growth, with perennial branches, and a distinct trunk or stem.

Trunk; the main stem or ascending axis: chiefly applied in the case of trees, but strictly applicable to the main stem of all plants.

Undershrub; properly a kind of plant intermediate between a shrub and herb, differing from the former in partially perishing during winter, and from the latter in having branches of a woody texture often living more than one year.

Utricular tissue; same as *cellular tissue*.

Vaginellæ; same as *ramenta*.

Vascular tissue; simple membranous tubes, which are the vessels of plants; they are of two principal kinds, spiral vessels, and dotted ducts.

Verrucæ; warts or sessile glands produced

on the surface of some plants, which gives it a peculiar kind of roughness, which condition is called *scabrous*.

Vesicular tissue; the same as *cellular tissue*.

Woody tissue (lignin); the solid parts of plants, consisting of membranous tubes lying in bundles, more or less compactly. It is the part which gives durability and stiffness to the vegetable fabric.

OBSERVATIONS IN NATURAL HISTORY.*

THIS acceptable volume is ushered in with an introduction on the importance of observing nature in all her works, and of recording all those facts which have any interest, or that appear novel. The advantage of constantly making notes of all we observe that is the least out of the common way is obvious, and in the course of time secures a collection of facts that become almost invaluable; and there are no persons who have a better opportunity than gardeners. They move in a little world of natural history. Their plagues and pests, which are almost innumerable, afford them abundant means of observation, and the necessity of finding out their habits and of becoming acquainted with their complete natural history, ought alone to be sufficient inducement. The author of the volume before us says in his introduction:—

“Let us stop to take a general view of the descriptions of facts which are wanted by the naturalist to enable him to proceed in his inquiries into the general principles upon which Nature seems to have based her system. For this purpose he must have under his view all the different species and varieties of animals with which this earth is peopled; and he ought to be able to inspect them, not merely in the dead or preserved state, but in the living or at least recently killed. Without this he can never closely investigate, or fully understand, many parts of their structure, the knowledge of which is sometimes essential for forming even the most distant idea of their true affinities. Besides this, there are many tribes of animals, especially among the lower classes, which, from their delicate organization, are scarcely capable of being preserved at all. To study these, therefore, and to obtain even the most general view of their organization, it will be necessary for him to resort to the spots where they are found. But

* Observations in Natural History; with an introduction on habits of observing, as connected with the study of that science. Also a Calendar of periodic phenomena in natural history; with remarks on the importance of such registers. By the Rev. Leonard Jenyns, M.A., F.L.S., etc., Vicar of Swaffham Bulbeck, Cambridgeshire. London: John Van Voorst, Paternoster-row.

further, in addition to a knowledge of structure, the naturalist requires a knowledge of habits. The former, indeed, is always connected with, and more or less subordinate to, the latter. And though he may sometimes infer a particular habit from a given structure, yet such inference can only be the result of having first actually observed their co-existence in a large number of instances. After all, what is more varied than the habits and instincts of different animals? How multiplied are the resources of Nature in compassing her ends! How often do we find the same object attained in as many different ways as there are cases in which the object is sought! Again, how strangely are both habit and structure sometimes modified by accidental circumstances, and by conditions affecting certain particular localities!—So that it is at once obvious, that, in order to become acquainted with all the phenomena of Natural History, a man must leave the retirement of his study, and pursue Nature into her own haunts, amid fields, waters, woods and mountains, (to say nothing of travelling into foreign climes,) or else he must have a large proportion of such facts collected to his hand by others, upon whose accuracy he can depend.” —Pp. 6—8.

There is a good deal of truth in all this. A fact that may seem of no importance may form a link in the chain of circumstances and peculiarities which complete the natural history of an animal, and the want of that link may have left it in doubt. The author however takes a more enlarged view of the case. He treats of natural history as subservient to other sciences, and here there is a wide range. No one can deny that in Horticulture much depends on the knowledge of natural history, not only of plants but of the living myriads that live on them and on the soil they grow in. So it is with other sciences. Meteorology, for instance, a science almost in its infancy, may be greatly assisted by the knowledge of the habits of many living subjects. As the author says :—

“We have hitherto spoken of observations in Natural History, as made with a view to promote the advancement of that particular science, and to supply facts upon which all generalizations must rest. But some of these facts, when obtained, may be of use in other ways. They may assist in forming the statistics, as it were, of other sciences, particularly Meteorology, for which purpose they have been assiduously collected by some observers. The different times at which the periodic movements of animals take place, their times of breeding and hybernation, and many interesting phenomena of the same na-

ture also, in the vegetable kingdom, the times of the leafing of trees and the flowering of plants, the ripening of fruits, &c.—all these are more or less connected with the progress of the seasons, and climatological considerations, and on this account are well worthy of our notice. The Calendar of Flora in the *Amœnitates Academicæ* of Linnaeus is well known, and White’s Naturalist’s Calendar known, perhaps, still better in this country; and from the circumstance of the attention of the scientific public having been lately re-awakened both here and abroad to this subject, we have been induced to devote to it a certain portion of this work, as a guide and stimulus to those who are disposed to join in making observations of this nature. What, however, we have chiefly to say on this head will serve as an immediate introduction to the Calendar, which we propose offering to the reader in another place. We shall simply state here that the regularity which pervades nature, as regards the recurrence of periodic phenomena, is very striking. We mean not that the incidents of the several kinds above alluded to always fall out on a particular day, though no doubt the averages of many year’s observations, taken at intervals, would bring them to a near coincidence. But it is rather the regularity with which they uniformly succeed each other, from which there is little deviation, that is so remarkable. Why the toad should always be a few days later in spawning than the frog;—or why the pheasant should hatch before the partridge, though the latter pairs for the breeding season long before we hear the sexual crow of the former;—or again, why the apricot should invariably flower a few days before the peach, yet generally come into leaf a day or two later; these, and a thousand other little matters of the same kind that might be mentioned, furnish much room for reflection to the thoughtful inquirer. Nothing also is more surely regulated by the seasons than the various sounds emitted by different animals, whether the notes of birds, or the cries of insects, &c., which falls so gladly upon the ears of the naturalist, indicating to him the different feelings by which such animals are actuated. The pleasure, indeed, afforded by rural sounds has been often rapturously spoken of by ardent lovers of Nature, and the poet has left us lines on that subject, the beauty and force of which have been frequently alluded to :—

Nor rural sights alone, but rural sounds,
Exhilarate the spirit, and restore
The tone of languid nature,

* * * * *

Ten thousand warblers cheer the day, and one
The livelong night : nor these alone, whose notes
Nice-finger’d art must emulate in vain,
But cawing rooks, and kites that swim sublime
In still repeated circles, screaming loud.
The jay, the pie, and ev’n the boding owl,

That hails the rising moon, have charms for me.
 Sounds ioharmonious in themselves and harsh,
 Yet, heard in scenes where peace for ever reigns.
 And only there, please highly for their sake.

The Task.

But we are here speaking of the sounds of animals as simply indicating the progress of the seasons. It has been said, and it is not far from the truth, that if an observant naturalist, who had been long shut up in darkness and solitude, without any measure of time, were suddenly brought blindfolded into the open fields and woods, he might gather with considerable accuracy from the various notes and noises which struck his ears what the exact period of the year might be. Some instances of a remarkable coincidence in this respect will be found mentioned in the body of this work."—Pp. 14—16.

The introduction teems with good advice and good feeling. There is a pleasant quiet tone in all the lessons which it imparts. It may be studied with advantage by all classes, and by none with more real benefit than the growers of flowers, fruit, plants, and vegetables. A man for instance should know every state of whatever insect troubles him in his business, from the almost imperceptible spider to the destructive grub and caterpillar, for it is only by knowing every peculiarity that he can effectually rid himself of many of those things which are highly injurious, and it will be found as necessary to know something of the larger animals, for he has enemies in many forms. He cannot therefore be too observant. As the author says in the twenty-fifth section of the introduction :—

"It may be useful to young observers, to say a few words in reference to the best manner of *searching for facts* in Natural History. —When a traveller reaches a new country, or one which has seldom been visited by naturalists, almost everything he meets with will be new also, and at every step he is called upon to register some fact or other. There are here scarcely any directions necessary beyond what have already been given. He must have his eyes and ears open, and with pencil in hand faithfully record whatever falls under his observation. Often too in unexplored regions, there is no difficulty in watching the habits of animals, from their being unaccustomed to man, and under no fear at his approach. Where this is the case he possesses great advantages, and has an opportunity of seeing more of their ways, as well as seeing more surely. But this seldom happens anywhere; and in thickly inhabited countries the observer must exercise great caution and address, or even have recourse to stratagem, in order to become acquainted with the objects of his search. Of course this remark is not applicable to the collecting of facts respecting

the lower animals, which are often stationary, and quite indifferent to being watched. Here the observer may immediately resort to those localities, which are tenanted by the particular tribes he wishes to study. But as regards quadrupeds and birds, with which principally the greater number of persons occupy themselves, they are generally not to be approached without stratagem: and if they are species frequenting plains or other open places, this is unavoidable. Also, if the observer is collecting facts for the history of any particular species, he must follow up that species wherever it is to be met with, and must exercise care and ingenuity, as well as a perpetual watchfulness, in getting acquainted with all the particulars of its life. But if our researches are carried on in a woodland district, especially in our own country, and we are not particularly interested in one species of animal more than another, we would strongly recommend, or at least as an occasional practice, the taking our station in some particular spot, and, instead of going to look for objects, noting down whatever occurs, which we consider worthy of our regard. Sometimes in this manner we shall have our attention called to little matters, which, by being always on the move and on the look out for more striking facts, we should have long continued to overlook. In the dearth of larger animals, or in the intervals between their drawing near enough to be observed, we shall naturally look closer into what is at hand, if it is only to while away the time. And there is no spot so barren of life as not to afford insects and other minute creatures, whose ways and actions will amply reward the curiosity of such as deign to bestow their attention upon them. Many a naturalist, when standing under a tree to shelter himself from a passing shower, has been led to the observation of facts, connected with the smaller animals, or the more concealed processes of vegetation, or perhaps to the discovery of some new species of lichen or fungus, which, but for this accident, he might never have noticed. And to return to the case of the observer in the wood, he will gain an advantage over the larger animals by being himself stationary. It often makes a considerable difference whether you approach them, or they you. They are much more easily frightened in the former case than in the latter; and less easily induced to resume their freedom of manner, after the interruption caused by having their retreat suddenly broken in upon. Add to which, there is always the chance, when moving about, that we disturb some bird or quadruped which, till the moment of surprising it, we did not observe, and which not only takes the alarm itself, and instantly hurries away to be

seen no more, but at the same time gives the alarm to others, and causes a general desertion of the locality we are traversing."—Pp. 40—42.

With regard to the body of the work it confirms a large collection of facts without any particular order. These facts are for the most part of a nature to be hardly called common. They have some novelty or singularity about them. Many are valuable, as indeed all facts are when just published. Some of these are interesting to all classes, others are valuable to a particular class. There is no general history of anything. We select two or three instances which are as good as a thousand.

"*Aphides*.—Oct. 3d, 1822.—This morning on rising we found the air completely choked with *Aphides*. The steps at the house-door, and even the very walls, were black with them. On walking out, myriads alighted upon one's clothes; and getting also into one's eyes, ears, and nose, proved an intolerable nuisance. In the middle of the day I took a circuit of about three or four miles from home, but found the quantities of these insects the same wherever I went. A friend, too, who arrived from Cambridge, distant about eight miles off, assured us that they were in equal plenty there. Where could these prodigious multitudes come from, and whither were they directing their flight? Such questions are easier asked than answered. It is worth noting that the day was particularly mild and calm for the time of year, and had begun with a fast mizzling rain, which lasted for a considerable part of the morning. At 4 P.M. the thermometer was as high as 64°. The wind was easterly, and had blown steadily from that quarter for three or four days previous."—P. 283.

"*Red Spider*.—In the summer of 1844, the gardener at Bottisham Hall directed my attention to a peach-tree infested with the red spider. The tree had a very diseased appearance; the leaves were red and spotted on their upper surface, and fell prematurely, stimulating the tree to put forth new leaves from the next year's buds, and so subjecting it to great exhaustion. On examining the leaves through a microscope, they were found to be infested with a very minute mite, scarcely bigger than the point of a pin, of an oblong-oval form, with eight legs of not very disproportionate lengths, but the anterior pair a little the longest; the body of a yellowish-orange-colour, some specimens redder than others, and some with an oblong dark spot on each side of the abdomen; the legs pale whitish, and transparent; two eyes, one on each side of the anterior part of the body, forming a bright red spot. These mites were in all stages of growth, and had evidently

been bred upon the leaves. The young were more pale-coloured than the adult, which were often deep red; the former were also much more bristly than the latter, the hairs seeming to wear off with age. Here and there might be discerned (more especially on the young leaves that were prematurely forced, as above mentioned,) clusters of minute globules that appeared to be eggs. There were also, on the tree, great numbers of *aphides*, which appeared to have had some share in bringing it into its diseased state; and also a few of the larvæ of what was supposed to be a *Hemerobius*, preying upon both mites and aphides, empty skins of which were scattered everywhere upon the leaves. This mite is no doubt the *Acarus telarius* of Linnaeus, so called from a thin filmy web which it spins, and with which it mats the under side of the leaves of the trees it frequents. Such a web I discovered upon the leaves in question; but the threads of which it is composed are so extremely fine, that, when single, they can be with difficulty perceived, except under a high power of the microscope. The web alone must injure the health of the leaves, independent of the punctures made by the mites themselves, which last were distinctly seen in some instances inclining forward the anterior extremity of their bodies, and plunging their rostrum into the leaf to feed. The mites run upon the threads of their web like spiders, but not very swiftly; off the threads their motions seem impeded, and upon a smooth surface like glass it is with some difficulty they move at all. When once a tree has become much infested with this parasite, its cure is next to hopeless. In the present instance, the tree had shown the disease year after year; and there was nothing to be done, as I was told, but to cut it down, which has since been effected. Some have recommended frequent sprinklings with cold water, at least for plants in hot-houses, which are often attacked by these insects; but this remedy is not a certain one, nor to be relied on as permanent in its effects. In the case of fruit-trees labouring under this disease, the leaves are constantly falling, and carrying with them to the ground numbers of the mites, which either ascend the tree again, or, if it be late in the season, harbour under stones, &c., near its foot, till the ensuing spring."—Pp. 293—295.

"*Extraordinary swarm of flies*.—During the month of September, in the year 1831, a small dipterous insect, belonging to Meigen's genus *Chlorops*, and nearly allied to, if not identical with, his *C. laeta*, appeared suddenly in such immense quantities in one of the upper rooms of the Provost's Lodge, in King's College, Cambridge, as almost to exceed belief. The same species of fly, or one closely

approaching to it is not uncommon in most houses towards the decline of the summer; but in this instance their numbers were so great, and their appearance so sudden, as to surpass anything of the kind I had ever before witnessed. It was not till after a fortnight had elapsed from the time of these insects being first noticed that I had an opportunity of seeing them myself, during which interval their numbers had been greatly thinned by fumigations of tobacco and other substances employed as a means of destroying them; nevertheless, they were still in immense profusion, and my informant told me that in the first instance the greater part of the ceiling, towards the window of the room, was so thickly covered as not to be visible. The exact day of the month on which these insects first showed themselves was not noticed, but, as far as could be remembered, it was about the 17th of September. They appear to have entered the room very early in the morning, by a window looking due north, which had been open during a part of the night, being first observed between eight and nine A. M. A few were noticed in the adjacent rooms facing the same way, although, comparatively speaking, in no great quantity; perhaps, in consequence of the windows of those rooms not being opened at quite so early an hour. None at all, however, had been seen in the house previously to that day. We are at present so ignorant of the habits and economy of the minuter tribes of insects, that it is not easy to give an explanation of this phenomenon. It would be interesting to know whether the above had been all bred in the immediate neighbourhood, and at the same time, or whether they were swarms that had collected from different quarters for the purpose of migration. Many facts are on record which seem to confirm the idea that insects do occasionally change their quarters in immense bodies; and some have occurred to myself, which I have no doubt, were connected with such a circumstance, not only from the large numbers of the insects observed, but from the steadiness of their flight, and their continually persevering in one given direction. It is worth noticing, with respect to the present case, that King's Lodge is situated close to the river Cam, which at that place runs nearly due north and south; and it is just possible that this circumstance may have had some influence in directing the movements of these insects. I find also, by referring to a journal of the weather, kept in the neighbourhood of Cambridge, that, about the time when they were first observed, the wind was N.N.W., and that it had been blowing steadily from that quarter for four successive days."—Pp. 275—277.

From these it will be seen that there is no connexion in the facts; they are isolated and independent; they may or may not have been observed before; perhaps in some instances recorded and published before, but for the most part they are certainly new. The work may be looked upon as a book of instruction, one which may be read with advantage by persons of all ages; as good for the school as for the library, if it were only for the introduction, which we confess we like better than the facts. It is neatly printed and well got up, quite after the usual style of the publisher, Van Voorst.

PLANTING AND MANAGEMENT OF TIMBER.

THERE would seem to be little or no difference at first sight between planting fruit and planting forest trees; but, in one respect, they may require treatment so different as not to seem like the same operations. For instance, the orchard *must* be had, the wood *may* be had, the orchard *must* have the particular fruit trees required for use, the wood *may* have the trees which best suit the soil; the soil, if improper for an orchard, *must* be removed to be replaced by that which is proper, or mixed, and changed in its properties to suit the tree placed there; and when we have done all we can to suit the trees, they must grow until their roots find their way through the prepared ground, and touch the ungenial soil, when they will begin to decline: the larger the hole filled with proper soil, the longer the tree will last, and provision must always be made for a succession. But preparation of soil for timber trees would be ridiculous. Fruit trees may be renewed every ten years if it were required; one set of trees under another might be produced without difficulty; but for timber trees, which are to stand a century, artificial means are worse than lost time; so long as the roots find room in the prepared soil the trees flourish, so soon as they reach the native soil they feel the consequences. If the native soil be congenial, all the artificial means will have been useless; and if not, the trees fail after the loss of all the years they may have been planted. The answer to this may be, perhaps the means were not sufficient; our reply is, no purse would be equal to an extensive plantation in artificial soil sufficient to perfect the timber. But let any one who desires to plant, consider that which will best suit the soil; let the growth be natural, and it will be permanent; make it artificial, and though it may flourish long enough to get the steward called a clever fellow, the sons and grandsons of the owner will find stunted unhealthy timber fit only for fire wood, and too slow of growth to be worth

keeping for that. We repeat that it is widely different in the case of fruit trees ; every year repays the trouble of artificial planting, and if they required to be renewed at the end of ten years, still would it be worth the toil and expense. But there are other cases in which planting artificially may be desirable ; namely, in parks and ornamental grounds. The effect has to be produced, and it is as necessary to prepare the ground properly, at whatever cost may be required, as it is to prepare the foundation of the mansion properly to carry the superstructure. But for planting on a large scale artificial soil is out of the question, because it is but little use to secure the first ten or fifteen or even twenty years of health, if it must be followed by canker and decay. There is no difficulty in determining as to the choice of trees ; but let them have no manure, no driving, no temporary excitement ; let the ground be loosened, and indeed trenched, if it will bear the operation, whether the trees chosen be elm, oak, plane, chestnut, birch, the firs, or any other, or a mixture of all ; have the plants small, for one of the worst errors committed in forcing plantations is the planting of trees too old for the purpose. The disadvantage of too large a plant is great. In the first place, it is sure to have suffered more in the moving ; in the second place, it must be staked, or it will be disturbed by the first slight breeze ; in the third place, there is more labour attached to the work in any stage. It is impossible not to foresee all these things ; but there is yet another disadvantage worse than all, the losses by failure in the growth ; the two-year old seedling would, in time, overtake the very best of the plants moved at a greater age ; small plants come up with good roots, they are not affected by the wind, they begin to grow directly because they receive no check, and they are in every way likely to make better plants and better timber. Connected with this subject we subjoin a system of arboriculture, and especially of pruning, by Mr. Gavin Cree, whose experience is equal to that of any man in the United Kingdom. The subject is treated scientifically, and as such, may be studied with advantage. Mr. Cree says,—

Scientific arboriculture may be defined, "The culture of wood conducted on physiological principles, or a knowledge of the organs which constitute the internal and external structure of trees, and of the various functions these organs perform through the instrumentality of external agents." These are generally treated as if they were inorganic matter, they are operated on as the ploughman operates on the ground, or as the carpenter or blacksmith on the wood or iron under their hand. Many eminent men have written treatises on vegetable anatomy and physiology, and many have

promulgated their sentiments on the pruning of forest trees, while neither party understood how the science of vegetable physiology ought to direct the mechanical operation of pruning, so as to make it affect, to the greatest extent, the growth of the tree. There is in trees as in animals a vital power which presides over all their functions. This power is the agent by which the ascent and descent of the sap is produced, and certain internal and external causes facilitate the exercise of the phenomenon. Among the external are to be ranked the influence of air, heat, light, and moisture ; and it is to be admitted that there is strong attraction between air and water ; for no air is found without water, and no water without air ; and the system of operating on the lateral branches by shortening them. I shall give an outline of the principles which led me to the conviction that the system of pruning by shortening the lateral branches, which I brought forward a number of years ago, is calculated more than any other system to secure for the benefit of the tree an extra nourishment. The organs of nutrition or vegetation have one common object, to support the life in the vegetable, and the powers of these organs may be greatly increased by mechanical means. In order to use these means in a way to assist nature, some knowledge of the physiology of plants is requisite ; the director or operator must understand how the organs exert their functions, otherwise he cannot reasonably expect to be successful. The different processes of the sap or vegetable blood must especially be carefully studied, as by it the growth and vigour is sustained. The sap is acquired and influenced in diverse ways.

In spring, the small spongelets or extremities of the roots absorb the fluids and gases from the soil, which are conveyed by an inherent power depending on the life of the tree ; or, more properly, the ascending sap is acted on through the roots by atmospheric pressure, up through the capillary tubes till it reaches the extreme ramifications of the stem, shooting forth buds and expanding

The common sap having extended over all the branches, it mingles with the fluids absorbed by the leaves, and losing the watery and aëriform principles which are useless for nutrition, by evaporation, it returns down the vessels of the bark, and in its course deposits cambium, which forms the annual rings of wood which extend to and strengthen the extremities of the rootlets, whereby they are made to extract more nourishment from the soil through the season ; and as the two saps commingle in the leaves, the descending sap which has not been deposited, in like manner mixes with that extracted by the rootlets, and is again carried up with the ascending sap.

How to economise these fluids for the advantage of the tree is next to be considered. It is obvious, then, that when the upper lateral branches are shortened to half the length of the leading stem, and the others proportional, the sap has lesser superficies to cover than when they are allowed to extend to an improper length and thickness; in consequence there is a greater supply for every part of the tree, and as other fluids, such as water moving in a channel, acquire additional momentum when augmented, greater vigour and velocity of movement is imparted to the sap by the abundance of quantity; and so great is the beneficial effect resulting therefrom to the tree, that from the extraordinary size, and healthy and brighter green foliage which clothes the branches, it attracts more than three times the nourishment ordinarily imbibed from the atmosphere, under different management. The branches which are shortened always remain slender; by reason of the small superficies of the branch, and the rapidity with which the sap moves, very little of it is retained by the branch, and of course nearly the whole is deposited in the body of the tree, and the foliage remains nearly a month longer on the tree, which accounts for the wonderful rapidity of growth effected by this method of pruning.

The smallness of the branches is of advantage likewise, when it is necessary to prune close to the body of the tree, as the wound made by that operation is proportionally small, and may be expected to cicatrize in the course of three years. It may be worth remarking, that if the branches are properly shortened, the trees never become what is improperly termed hidebound.

It has been found that trees will advance in height and circumference as much, taken averagely in six years, if the branches are shortened, till a tree is 18 feet in height, and 15 inches in circumference, as they will in 15 years, if they are not shortened; and the more a tree is pruned up close to the stem before it is 18 feet in height, so much is it retarded in height, that trees in many cases of considerable age that are in an unhealthy state will be brought round by the shortening the branches.

Mr. Gavin Cree has been in practice very successfully for many years; and it is something in favour of his system that it has always answered well with him. Others have published their notions as to the proper way of managing fruit trees: Mr. Thurtell, of Norwich, has on two or three occasions lectured on the subject; once before the Royal Botanical Society; and, on some future occasion, we shall give the substance of his plan. It is quite clear that there are many ways of

accomplishing the same end: the mischief is, that many people attend to part of the instructions, and do not carry out the whole—they adopt parts of two systems, and spoil everything.

AN ABSTRACT OF REPORTS, PAPERS, AND PROCEEDINGS OF THE HORTICULTURAL SOCIETY OF LONDON, WITH NOTES BY A PRACTICAL GARDENER.

FOOD OF PLANTS.—The first point of science to be known by gardeners is, what constitutes the food of a plant. This is ascertained by examining its chemical condition. What it contains is what it feeds on. Plants have many kinds of food, the first of which in importance is charcoal. Charcoal varies greatly in its appearance, according to circumstances. The diamond is charcoal in its purest state, and charcoal is often combined with other bodies, whose appearance would least indicate its presence. Loaf sugar is composed of charcoal and water. Starch consists of a considerable quantity of solid charcoal. Oil of turpentine (carbon and hydrogen) contains charcoal. Charcoal may also exist in the form of air or gaseous matter; the most important of which is carbonic acid, or a combination of charcoal and oxygen. But although these substances contain more or less charcoal, they do not all possess it in a fit state for entering into the composition of plants. Those substances only can be beneficially applied as food which contain charcoal in a form capable of being taken up through the skin and leaves of plants. Oil of turpentine is not food for plants, although it contains charcoal. Sugar and starch are, when internal, but not when external, partly because solids cannot be taken up. It is necessary that they should be dissolved, which readily takes place in the tissue of plants. Sugar, however, might be used as external food, in minute quantity, if it were worth while. Charcoal itself is not fit food for plants until it becomes gaseous. This is the form in which nature herself provides it. From three to eight per thousand parts of the air we breathe is carbonic acid gas. It is the heavy gas so destructive to animal life, often found at the bottom of wells and mines. It is supplied in considerable abundance from decaying animal or vegetable matter; but the great source of supply is the animal kingdom. Indeed there is, perhaps, no arrangement in the whole economy of nature more beautiful than that observed in relation to this gas. It maintains the equilibrium or balance of the animal and vegetable world. What is thrown off from the lungs of the animal kingdom as poison to it is food in its best form for the vegetable world. But notwithstanding the

immense quantities exhaled from the lungs of animals, the atmosphere contains but a small quantity, as was before stated, and hence the importance of giving motion to the air in hot-houses. For plants feed through their leaves and skin, as well as by their roots, and it is obvious that air passing quickly over the surface of a plant will part with its carbonic acid in greater abundance than when it rests upon the absorbing surface in tranquillity. The roots require that air containing carbonic acid should have the freest access to them, on which good potting greatly depends, as does the operation of draining, which derives a large part of its advantage from the freedom with which carbonic acid can find its way to the roots of plants through the numerous chinks and crevices that lead the water into the drains.—*Dr. Lindley's Lecture.*

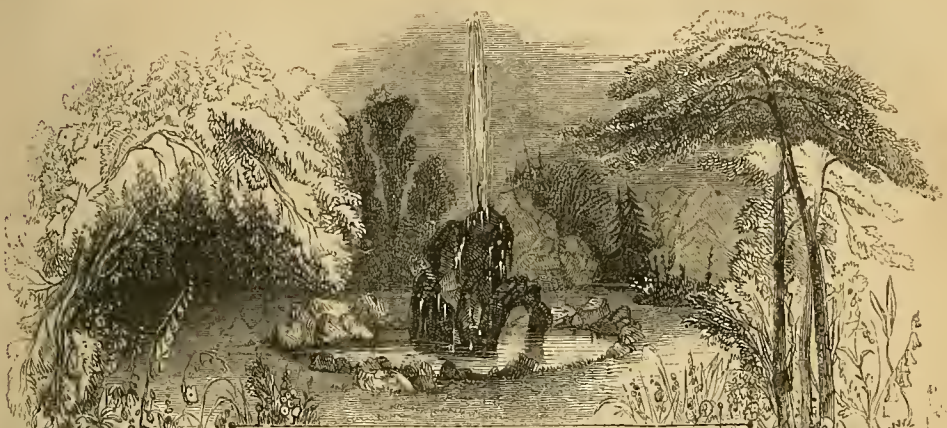
ON TRANSPLANTING PEAS FOR EARLY CROPS.—It has been a rule with some of the old gardeners for many years to transplant their first crops of early peas. I have been in the habit of doing so for thirteen years, very successfully, with my first early peas, and also with my first large late peas. Our practice is very simple; the compost we use is as free from rotten dung as we can get it, the peas are sown in pots all over the surface, and the pots are placed either in cool frames or in moderate heat, as may be deemed necessary. The time of sowing depends on the season, the earliest is about the middle of January; at the time of planting, the ground which has laid in ridges during the winter is first levelled down, and trenches are then cut through it by line, somewhat sloping, in the same way as for planting box, and deep enough to admit the roots of the plants without bending them. The peas are turned out of the pots, and about two inches of the bottoms cut off before the plants are separated, and in parting them care is taken to keep them in tufts of about four or six laying them into the trenches, and filling up with the natural mould, if dry enough; but if not, with some mould which has been kept dry. I have now one long row of the frame pea, planted, as described, on the third of last month, which is three inches high, while another by the side of it, sown in the natural way, and which had made its appearance above ground before the others were planted, are very little more than one inch high. Mr. Knight recommends poor light soil for transplanted peas, but I differ from him by experience; for when I have planted peas without manuring the border, my crop has been very inferior. I find when transplanted peas do not thrive well, that they are very apt to bring small pods not half filled.—The above is the substance of a letter by Daniel Judd, F.H.S.; and in a note the secretary observes, “Mr.

Knight's object in surrounding his transplanted peas with a poor and light soil, is to check the luxuriance of growth, and consequently to induce early maturity. The quantity of produce would certainly be increased by using a rich soil, as proposed by Mr. Judd but this increase would be at the expense of the earliness of the crop, which is the main point to be gained by the practice recommended.

[This, like everything else, requires a middle course. The poor soil would risk the loss of the crop altogether: the rich would go to the other extreme; the sowing should be in poor soil, and the planting out in better, but not over rich.]

TOBACCO WATER FOR DESTROYING INSECTS.—The tobacco liquor I have used is procured from the tobacco manufacturers. In the process of preparing tobacco for use, the dried herb is steeped for a certain period, and the water which it has absorbed is afterwards expressed from it, into the water in which it had been steeped. This liquor is to be purchased at eight-pence or ten-pence per gallon from the manufacturers, and should be obtained as pure as possible without adulteration. One gallon of the liquor is stronger than any that could be made from steeping several pounds of prepared tobacco in the same quantity of water. The mixture of the tobacco liquor with water is in the following proportions, and should be applied to the trees by means of a garden engine, or syringe, taking care, in its application, that it is given so forcibly that the under side of the foliage is well sprinkled. For the destruction of the green-fly, I mix one gallon of tobacco liquor to five gallons of pure water; this quantity is sufficient to wash three trees, twelve feet high, and each extending fifteen feet in breadth. For destroying the black insect, one gallon of liquor to three of water. For destroying the caterpillars on pear, apple, plum, and apricot trees, and on gooseberry bushes, one gallon of liquor to four of water. The above proportions have been frequently tried, and have never failed of success.—*Letter by Mr. J. Harrison.*

FORCING GOOSEBERRIES AND CURRANTS.—I have uniformly succeeded in ripening gooseberries and currants in peach-houses, in pots: in the beginning of November I select healthy year-old plants, and pot them in the size called twelves; these are then plunged to the rim in a border, and covered with any loose material, to protect the roots from frost. Towards the end of January they are removed into the peach-house, and by the end of April the fruit is ripe, and may be sent to table, growing on the plants. A succession crop is secured by taking another set of pots into the peach-house in the middle of February.—*Letter by Mr. James Hay.*



Annals of Horticulture.

"Gardening is the most rational of all recreations. It teaches forethought, industry, and economy of time. It exalts the mind, invigorates the frame, and constantly reminds us of the great God, whose hand is imprinted on every leaf, and who, in his bountiful goodness, rewards us with the fruit of the earth. To teach the cottager to manage his garden, is to lead him to happiness; to induce the higher classes to love flowers, is to find them innocent gratification, and provide employment for thousands."—GLENNY.

THESE truths cannot be disputed, nor do they require much explanation or support. No one can deny that gardening is the most rational of all enjoyments; for there is nothing in the way of a pursuit that is so free from inconvenience or annoyance to others, and yields so much true enjoyment; and it is not the least of its recommendations, that, however earnest and enthusiastic we may be, the pleasure we derive from it will bear reflection, and that we are constantly cheered by the advance of all the subjects we cultivate. But gardening, with all its advantages, would lose half its attractions, were it not for the records we possess of what our predecessors and contemporaries have done and are doing, and the facilities with which we can register the results of our own handiwork. The books afford us entertainment and instruction when darkness forbids employment in the garden; and, to those so inclined, there is as much pleasure derived from the act of imparting their knowledge to others, as there is in reading anything that is new to themselves. There is yet another source of enjoyment to the lovers of gardening—we allude to the pleasure derived from conversation and discussion among persons of similar tastes. We read of soldiers fighting their battles over again,

in allusion to their oft-repeated descriptions of what they have witnessed; and the enthusiastic gardener is equally gratified by an opportunity of relating what he has done, or may be doing himself, and listening to the doings of his neighbours and friends engaged in the same occupations: no one can deny, then, that gardening exalts the mind. That it invigorates the frame, is one of those recommendations which it has in common with many manly exercises; yet scarcely one of them can be indulged in to any extent without more or less danger to ourselves or others, whereas gardening is perfectly free from this objection, and it constantly reminds us of the Creator, whose wondrous works are nowhere more extraordinary than in the magnificent plants, the luscious fruits, and the beautiful and fragrant flowers, which are the objects of our peculiar care. To teach the cottager to manage his garden, is indeed to lead him to happiness, and to this great end is our present work devoted. To rouse his ambition, and excite his honest pride, and withal to direct both to the proper channel, is to raise him in the scale of society, and show him that industry is the foundation of true happiness; the rest will force itself upon his attention; make him but an industrious cultivator of his garden, and he will be

sure to become a good man. Every leaf has a lesson written upon it; and even where men are, in other respects, uneducated, they can read these. To induce the higher classes to love flowers, is a task worthy of the best efforts of the best men. Example goes much further than precept; and more good has been done by the wealthy portion of the public taking an active part in the cultivation and display of the magnificent gifts of Flora, than could have been done by the most effective writings, unaided by these examples. It is not a little gratifying to witness the prevailing taste for floral decorations at fêtes and parties, and the use of bouquets at public entertainments. Had we our will in these matters, there should not be a balcony without its plants, a room

without its nosegay, nor a town or city of any importance without its Horticultural Society, and periodical exhibitions. That such things help to employ many thousands, and contribute much to the happiness of all around, there can be no doubt. To watch the progress of a science which is giving us something new, or teaching us something good, every month; to record all that can interest the gardener or the employer, the professed Horticulturist or the amateur, is our task; and, aided by many of the most active and zealous practical men in the kingdom, we have every reason to hope that our work stands alone, an historical record of everything that is useful and instructive to the admirers of British gardening.

GARDENING CALENDAR FOR JANUARY.

THE CONSERVATORY.

THIS should be the floral head-quarters: the conservatory should always be kept gay with flowers, continually prepared in the forcing-house, and placed here whilst in flower, and removed as they decline, their places being occupied by other plants similarly prepared. To keep up a good succession of flowers demands much skill, and even more attention; and for the manner in which this may be accomplished, we must refer to another part of these instructions, under the head, *Forcing-house for Flowers*.

The general management of a conservatory, though it be what is usually termed a greenhouse conservatory, differs considerably from that of an ordinary greenhouse. The principal and permanent plants are planted out into beds and borders of prepared soil, and are allowed to grow somewhat in their native forms and proportions: the vigour which this induces renders it necessary to secure as much light as possible, and hence they are generally constructed with glass on all sides, and extending down to near the ground: for the same reason, where creepers are grown over the roof, they must be so trained as not to shade the other plants too much, except in summer, when the sun has great power, and a certain degree of shade is beneficial. Less air, too, is admitted, and the house altogether is kept warmer and closer than the greenhouse.

PERMANENT PLANTS.—These are the plants which are planted out into the prepared beds of earth; or other large specimens which occupy fixed or permanent situations in the house.

Pruning and transplanting.—Where any of the plants are growing too thickly, or too straggling, prune away the redundant parts. If the plants themselves are too thick,

let the least valuable be taken away, and the others be taken up and re-arranged, removing and replanting them carefully: this is often necessary after a conservatory has been planted eight or ten years; the plants, being put in thickly, to produce immediate effect, soon become crowded after they commence growing, and hence the removal of some, and the re-arrangement of the remainder, is rendered necessary.

Climbers.—The climbing plants planted out for the purpose of covering the pillars, walls, and rafters of the house, require the same kind of attention as that which will be noticed under *Greenhouse*, with this exception, that as there is a greater space to cover, none of them should be pruned back so closely as the plants in pots. One of the most beautiful of conservatory climbers is the *Wistaria sinensis*, which hardly ever wants pruning, and will extend to a great length, and in spring becomes loaded with its large pendent spikes of lilac, butterfly-shaped flowers.

Banksian Roses.—Two plants that ought never to be omitted in a conservatory, are the white and yellow Banksian Roses. Than large bushes of these covered with flowers, nothing can be conceived more beautiful. The plants may at first be trained up by a pillar, or a pole, or upright trellis placed purposely for them, until they reach some ten or twelve feet high, when the branches are to be allowed to grow unrestrainedly, and they will form large, spreading, drooping heads, which at the proper season are "smothered" with blossoms. Till they attain some size they scarcely require pruning at all; and afterwards, the removal of entire old branches, when they have become worn out, is all that should be done, leaving the younger ones to produce blossoms.

Camellias.—If the house is kept close, some of these will be very much advancing in bud ; and when such is the case, they should be well supplied with water, or the buds will be liable to fall off ; the same remark will apply to other plants, approaching a flowering state.

Daphne hybrida.—Wherever sweet-scented flowers are an object, one plant at least of *Daphne hybrida* should be introduced. Though a plant sufficiently hardy to endure in the open air in all ordinary seasons, yet, from its fine evergreen foliage, its property of being always in bloom, and its exquisite fragrance, it should always be planted in the conservatory. The flowers are not very showy ; they are dull purple, growing three or four together at the ends of the shoots. We have, however, known bushes of this plant planted out in a conservatory to continue blooming without intermission through the whole year.

Oranges.—Plants that were forced last spring in the late vineries will now be coming into bloom. Orange blossom is always prized, and therefore some pains may be taken to secure it. Seeds of Lemons or Oranges may now be sown, and the young plants grown freely all the season, in five-inch pots ; by next spring they may be grafted, and will soon form small compact blooming plants.

TEMPORARY PLANTS.—These consist of such flowers as may be forced or brought forward in other structures, and are removed here while their beauty lasts, merely for the purpose of decoration. To have a conservatory thoroughly and constantly decorated with these temporary plants is a pretty good test of skill in the management of flowers. We do not here enter into the method of producing these flowers, but must offer a remark or two in reference to their preservation.

In the first place, it must be remembered that all plants in flower require more water than those not in bloom ; it is not intended that they require to be deluged with water, but they require to be very carefully and regularly supplied, or it is possible that the bloom of many plants will fall off prematurely. Again, they must not be exposed to currents of air : currents of air should not, indeed, be permitted in any structure at this time of the year, much less in a conservatory ; for they have no other effect than that of paralyzing the vital action of the plants within their influence ; and therefore, while they are hurtful to all plants, they are specially so to forced flowers, which have been produced in a close, warm atmosphere. Again, the decayed and decaying flowers must be sedulously removed ; this is necessary no less on account of neatness and order, than for the purpose of preventing the injury or decay of the undeveloped flowers, which would be liable to suffer

from contact with those which were in a state of decomposition.

Flowers.—Among the principal ones planted out in the borders, some *Banksias*, *Enkianthus reticulata*, *Polygalas*, and *Daphnes*, will be in bloom. Of green-house plants that will be naturally in bloom, and may be removed here for the purpose of ornamenting this structure, which always should be floral head-quarters, are several species of *Erica*, *Corræa*, *Epacris*, *Lachenalia*, *Cyclamen*, *Primula sinensis*, the forwardest-planted *Cinerarias*, &c. Plants that may be gently forced into bloom are *Camellias*, *Oranges*, *Heliotropes*, *Gardenias*, *Green-house Azaleas*, and *China Roses*. Several stove plants may be removed here if the house is kept as warm as recommended ; but if a lower temperature is kept, they will not bear the exposure ; these are *Gesnera zebrina*, *oblongata*, and others ; *Gloxinias* ; *Cypripedium venustum*, and insigne *Dendrobium* ; several species, *Combretum purpureum* (or *Poirvea coccinea*), *Poinsettia pulcherrima*, *Euphorbia fulgens*, &c. Among the plants that may be had in bloom, if forced, are such shrubs as the hardy *Rhododendrons* and *Azaleas*, *Kalmias*, *Ledums*, *Cydonia japonica*, *Roses*, *Persian Lilacs*, *Double-blossomed Almonds*, &c. ; and of bulbs, *Hyacinths*, *Narcissus*, *Tulips*, *Persian Iris*, *Crocus*, *Snowdrops*, &c. The method of keeping up a supply of these latter, as already mentioned, will be detailed under the head of *Forcing-house for Flowers*.

Temperature.—The temperature of this house may be taken at 45 degrees as the minimum, and 50 degrees as the maximum by artificial means ; five or six degrees more may be allowed for sun heat. Great economy in heating will result from the practice, presently to be noticed, of covering the glass at night.

Watering.—The plants permanently planted out require water but seldom, but when it is applied it ought to be done thoroughly. During this month, and probably the next, none will be required.

Ventilation.—As the temperature should not fall much below forty-five degrees, so little or no air should be admitted until the heat exceeds that point. Air must always be admitted when the heat rises above the maximum point.

Insects.—At this time of the year, the plants should be examined, and the necessary steps taken to rid them of insects, where any may exist, by the means which will be referred to under the head *Green-house*.

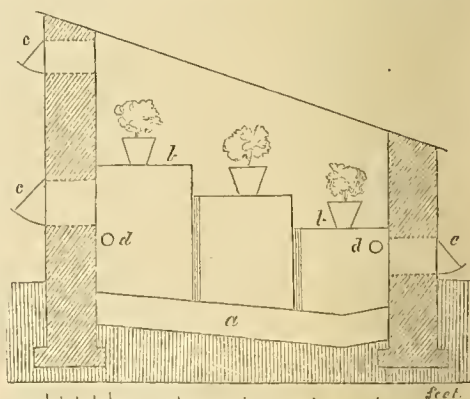
Routine.—There are several matters of routine which it is specially necessary should be attended to, more especially in the conservatory than in any other structure ; for this is, or ought to be, attached to the dwelling, and neatness should always prevail, and a “blaze of beauty” should be constantly kept up. As

this neatness and order will involve the daily sweeping the pathways, (which should be of stone), the greatest care should be taken *not to create a dust*, to fall on the leaves of the plants; not only does this detract from the cheerfulness of their appearance, but it is decidedly injurious to them, and whenever dirt or filth does accumulate, it ought to be removed forthwith either by the sponge or syringe. Every morning all the plants should be gently shaken, to dislodge any leaves that would fall during the day, and these must then be neatly raked off the surface of the border, previously to sweeping the paths. All flowers, as they pass their prime, must be removed for the same purpose, namely, to avoid by every means a littery appearance. This point of order is essential during the whole year.

THE GREEN-HOUSE.

It is very generally the case, that the green-house is made to contain a perfectly miscellaneous assemblage of plants. All plants, whatever their nature may be, which require a temperate climate, are congregated together in a structure known by this name. Now, whatever degree of success may have been attained under this arrangement, those who have paid little attention to the subject will scarcely credit the superiority of the practice of dividing green-house plants into a few natural groups, into which they may be easily classed, and cultivating each of these groups in a separate structure. Or, if this arrangement is not approved, there is another, scarcely less commendable, that of cultivating a few showy classes of plants, selected so as to keep up a succession of bloom through the greater part of the season, while successional groups are being cultivated in pits and frames, to take in due time their place as they each in their turn approach a blooming state. The difference in the appearance of a green-house managed according to either of these methods, and that of one in which the old miscellaneous character is maintained, is striking indeed: in the latter case, from the very fact of the miscellaneous nature of the plants, no system of culture can be followed up which is fully calculated to develop the beauties of any particular class of plants, without risking the deterioration of others, by a course of management unsuited to them; and therefore a much lower standard of beauty only is attained: in either of the former cases, the management may be concentrated upon one particular class or group of plants, and from the very fact that they are thus made to receive a course of treatment in exact accordance with their requirements, they will be found to display beauties, which those to whom such a course may be a novelty, will be but little prepared to expect.

It will be urged that such a division of green-house plants into groups, will render the erection of numerous structures a matter of necessity; and thus the means of carrying out such a principle will be placed beyond the means of the amateur of but limited resources. Though this objection to a certain extent holds good, it is by no means so great as might at first be expected; —for instance, an ordinary sized green-house could be easily divided into compartments, at but trifling expense; or many, if not all the plants might be grown in well-constructed pits, properly heated, which are very economical in their erection. The amateur, who but little understands the principles of cultivating plants, cannot be too strongly impressed with the fact, that for all purposes of growing plants thoroughly well, pits such as those now referred to, or very small low houses, constructed very similarly to pits, afford the *ne plus ultra*, beyond which there is nothing left to desire. In the course of these instructions it is intended to give an occasional diagram, showing the kind of structure best adapted for the particular purpose to which it may be referred. To enable those who may see the propriety of cultivating several of the groups apart from each other to carry their views into practice, we shall on all occasions notice the most striking of these groups separately: this arrangement will be in no way inconvenient for those who do not adopt such a division, inasmuch as the directions which are given will apply as much to the plants when grown together in one house, as when separated into distinct groups. The groups which we especially think it desirable to treat of separately, will be the Heaths, the Camellias, and the Geraniums; and even with these divisions it will be necessary to regard another division as purely miscellaneous, composed of plants which do not strictly associate with any



of the preceding. The annexed sketch represents a pit which is well adapted for the culture of green-house plants; and would also

provide accommodation, on a small scale, for the several groups which we shall refer to. In the sketch, *a* represents a bottom of concrete; *b*, are stages for the plants, made of slate or stone, in preference to wood; *c*, ventilators, by means of which a free circulation of air may be obtained to dry up damp, without opening the lights; *d*, hot-water pipes, or flues. A division might be introduced at every light, or every alternate, or third light, according to the number of plants grown of each group, and thus all the purposes of separate structures would at once be answered. When such an arrangement is adopted, the *Geraniums* should occupy the part nearest the furnace, so that they may be warmed when the others do not require it; next should come the Miscellaneous group; then the *Camellias*, and the *Heaths* and New Holland plants. On a larger scale, houses of greater dimensions, either detached or adjoining, might be provided: there is economy, however, in having them adjoining. It will thus be seen that the principle of separate cultivation involves no such difficulties as at first might be imagined.

HEATH-HOUSE.—This house, besides containing the *Cape Heaths*, is particularly suitable for the New Holland plants, most of which are exceedingly handsome; in short, than such an assemblage as this, it is impossible to conceive of anything more strikingly beautiful. The temperature by fire heat at this season should barely exceed the freezing point; in fact, unless in cases where there is a probability of the interior temperature falling more than four or five degrees below freezing point, there will be no necessity for applying artificial heat at all; and nothing but the state of the weather at the time can decide whether such is likely to be the case or not. As a safe rule, it will generally be found, that with an external thermometer at thirty-six degrees, still falling, and a clear bright sky, a gentle fire should be put on, increasing it, or otherwise, just so much as to keep out the frost, and nothing more. If the frost should penetrate, expel it very gently, and it will do the plants no harm; but if the temperature is rapidly changed, the plants will suffer. A free circulation of air is essential: a few of the ventilators should be open night and day when there is no frost; and in frosty weather advantage should be taken of the warmer parts of the day, about noon, to admit some portion of fresh air.

Ericas.—The soil must be evenly and regularly watered, so as to keep it just moistened. Dampness in the air should be avoided, though the opposite extreme of aridity is equally objectionable. In this, as in most other matters, the mean is the proper and most successful course. Little else is required now.

Azaleas.—The green-house *Azaleas* agree

very well in the treatment they require with the *Heaths*, and may be kept in the same structure. Particular attention is required to keep them regularly and evenly watered, for if the soil, or the roots are suffered to get very dry, the leaves will be injured, or will fall off, either of which will be detrimental to the beauty of the plants. A plant or two, of the duplicate specimens, may be taken into a warmer house, to bring forward the blossoms, which bear moderate forcing pretty well, but should be suffered to expand in a cooler temperature than that of a forcing-house.

The various *Cape* and *New Holland* shrubs which may be kept in the same house, associate with the *Heath* in the general principles of treatment. Growth should by no means be excited by warmth for some time to come.

CAMELLIA-HOUSE.—Besides *Camellias*, the house may contain *Rhododendrons*, *Oranges*, and other thick-leaved plants.

Camellias.—The house containing the store *Camellias* should be kept in pretty much the same condition, as regards temperature, as the *Heath-house*. Plant-houses should be provided with light moveable shutters, to fit over the roof; by this means a much less amount of fire heat is necessary, which is of great advantage to the plants: such covers may be made of a light wooden frame, covered with the patent asphalted felt, which throws off all the rain. The soil must be kept very evenly moistened, or the flower buds will fall off: this they will also do, if much, or any sudden variation takes place in the temperature; for this reason, admit air whenever the temperature reaches forty degrees; and apply fire heat to keep it from falling below thirty-three degrees. Some of the forwardest of the plants will have been removed to a warmer house, to bring out their blossoms, for decorating the conservatory or drawing room.

Oranges.—The small plants of *Oranges* and *Lemons*, kept for forcing into bloom, require similar treatment. The *Mandarin Orange* (*Citrus sinensis*) is excellent for this purpose.

Rhododendrons.—The *R. arboreum*, and all the tender hybrids produced from it, are properly placed here. Their flower-buds will begin to be swelling, but they will not naturally expand for some time to come. A plant or two may be taken occasionally to a warmer situation, in order to forward them, as they are at all times very desirable objects in the conservatory when in blossom.

Magnolias.—Some of the tender *Magnolias*, as *M. fuscata*, *pumila*, &c. are properly grown here, especially the former, which is a fine evergreen, with aromatic scented blossoms: these will be advancing, and the plants must be kept watered regularly, or they will fall off.

Daphnes.—The green-house *Daphnes* are among the sweetest of plants, and they are ever-green. *D. hybrida*, with purple flowers, is always in blossom, and a large plant or two in any of the green-houses will give out a most agreeable and delightful odour. A quantity of small plants of this should be kept, for removing to the drawing-room when in bloom: these are grafted on *D. pontica*, or *D. Laureola*; the former is preferable. *D. Cneorum*, a pretty little trailing species, with pink flowers, though hardy, is one of the best of plants to keep in pots for forcing into early bloom: it is also very sweet.

All these plants have thick leathery leaves, which are liable to become coated with dust and filth, and they are also subject to become infested with insects of the scale kind. This season of the year presents facilities for dislodging them, by carefully washing over every part of the plants with a sponge and clean water. This will at once remove the dust and accumulated filth by which the leaves become coated more or less, and by which the evaporating pores are obstructed or closed up: the plants will not only look fresher and more beautiful, but they will be benefited; for the function of perspiration is with them, as with animals, of too much importance to be arrested with impunity. The presence of scale insects (*Cocci*) always betrays neglect, and they are besides filthy and injurious; many recommend applications of sulphur, soft soap, snuff, and other ingredients for their destruction; but if the plants are carefully gone over with a sponge and clean water, and the insects carefully dislodged, there will not be much further difficulty about their destruction. Infested plants should therefore be cleansed now, as the state of the weather which occurs at this time of the year, is more favourable for such in-door operations, than for more active employment out of doors.

GERANIUM-HOUSE.—The plants in this house, which consist of what are called soft-wooded plants, are more liable to suffer injury from frost than the preceding. They require a mean temperature of 45 degrees, which may be increased to 55 degrees in mild days; air must be given every mild day, and fire heat used to exclude frost. It is not desirable to induce the majority to grow until next month, as the days are dark, and the growth would not be matured; but the earliest plants should be potted by the middle of the month.

Pelargoniums.—Some of the good forcing varieties, such as *Alba multiflora*, *Napier*, *Grace Darling*, &c., may be taken to the flower forcing-house, to be brought forward for decorative purposes. The stopping of these plants is an essential point of practice: some must not be stopped after this time; these will come earliest into bloom: others must be stopped as soon

as the shoots make two or three leaves, for some time to come, omitting some plants at each stopping, to follow the previous ones in blooming; thus a succession of bloom is maintained by a very simple process. The earliest forced plants, if partially cut back after their principal bloom is over, and brought into the green-house, will bloom a second time. The aphides, or plant-louse, must be guarded against among all house plants, though *Geraniums* (or *Pelargoniums*), *Calceolarias*, and other plants that associate with them, from their fleshy texture, are more liable to be attacked than plants of a more rigid nature. To prevent injury from them, it is best to fumigate every two or three weeks, which keeps them in check. Towards the end of the month the forwardest of the plants will require shifting. Use a rich loamy soil; pots about two sizes larger should be used.

Calceolarias.—These may be grown in the same house, and with the same general treatment: they are specially liable to be injured by the aphides, and therefore require to be carefully watched in this respect. The forwardest of the plants should be re-potted, as above. Seedlings sown in autumn should be potted off into separate small pots.

Cinerarias.—The forwardest potted of these will many of them be in bloom, and they form one of the most striking winter ornaments of the green-house. Being in bloom, or rapidly advancing towards that state, they require more water than *Geraniums*. Those left over from the autumn in small pots will require to be re-potted in light, rich loamy soil: a few should be re-potted every week, so as to keep up a good succession of bloom. They are very subject to the attacks of aphides, which, of course, must be kept in check.

Fuchsias.—These are better kept from growing as much as possible, by keeping them comparatively dry, and as cool as possible, consistently with the exclusion of frost. A few plants for early flowering may be placed in rather a warmer position, and regularly watered; but, as well as all the other plants grown in this house, they require all the light that can possibly be secured to them, on account of their being in a progressive state. The old plants are better either pruned in close to the principal leading stem, when they throw out laterals all round, or cut down to near the ground, with the view to secure a strong young leading shoot to each, which, if properly managed, will produce plenty of lateral shoots, and will form a handsome bush. Young plants are best managed in the latter way. The smaller kinds, such as *microphylla* and *reflexa*,—two beautiful little subjects,—require little pruning of any sort, but should be grown into neat compact bushes.

Tropæolums.—In some cases these will have started into growth in the autumn, and when such has been the case, it is hurtful to them to attempt to check their progress, as the vital actions of the plant having been called into play, the arrest of them will only tend to weaken the plants, and lessen the quantity and beauty of the blooms. They should be potted at once when their growth is perceived, into pots large enough to flower them in, which, if the roots are large, should be nine-inch or eleven-inch ones; or if small, six or eight-inch ones will be sufficient. As the branches grow, they require to be carefully fastened to appropriate slender trellises; columnar ones associate best with other plants. Where the roots have not started previously, they may be potted now as above directed, and being placed at the warmest end of the house, will soon commence growing: give them no water until their shoots appear, as the moisture of the fresh soil given to them at potting time, will be enough to start the roots, and a greater amount would be likely to rot them. The pots must be well drained, and water cautiously administered; as much as will keep the soil very moderately moistened will be enough until they begin to grow freely.

HOUSE FOR MISCELLANEOUS PLANTS.—In this house, upon shelves or back stages, may be kept all the green-house bulbs, such as *Oxalis*, *Lachenalia*, *Ixia*, and many others of a similar nature. These should be kept dry all the winter, when at rest. The *Lachenalias* will, some of them, be growing and advancing in bloom; they require to be moderately watered. When any of the other kinds are observed to be in a growing state, they must then be watered and potted, if necessary, and water must subsequently be regularly supplied them when they need it. Some of the *Oxalis* should be forced a little to get them early into bloom, to give variety in the conservatory.

Primulas.—A supply of Chinese Primroses (*Primula sinensis*), must be potted to keep up a succession of bloom in the spring months. The most beautiful are the double varieties, which are propagated by cuttings, and require careful treatment. The fringed flowered varieties, of different colours, are the best of the single ones; pot them in rich, light, vegetable earth. They are very impatient of too much moisture continually about the roots.

Climbers.—Climbing plants should be attended to before they commence growing, and provision should at this time of the year be made for the due disposal of their annual growth, so that they may not become confused or crowded at the time when they will be expected to be in good order. To do this pro-

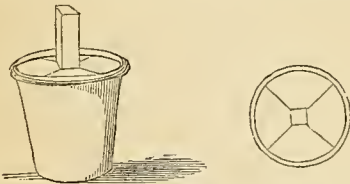
perly, a knowledge of the growth of each kind is requisite, for unless the degree of vigour which they are capable of exhibiting is known, it will be impracticable to provide trellises of suitable size for them. In most cases, it is desirable to place climbing plants at once in pots suitable for blooming them, for it is exceedingly inconvenient to transfer them, after the branches have extended over the trellis, without fear of injuring them; and this renders a knowledge of the plants also desirable, in order to portion out the size of the pot to the growth of the plant which is to be placed in it. At this time of the year, too, it is desirable to prune them: those that bloom on the main or leading shoots of the season, should be cut back rather freely, as the branches which are thus produced will bear the blossoms; those that bloom on the small lateral twigs produced on the main shoots of the preceding year, must be differently managed; some of the strongest and best ripened shoots should be selected and retained, removing only a short portion of their extreme immature points; the rest should be cut quite away. Do not let the branches become crowded, but keep them moderately thin. This potting and pruning will be early enough if done towards the end of the month. Have all the young shoots properly tied in as they progress in growth.

Succulents.—Succulent plants will be chiefly inactive at the present season, and in the absence of much light, it is well to keep them so; this may, in great measure, be done by withholding water; it is only by the application of too much water, aided by the sudden gleams of sunshine we sometimes experience even in "dreary winter," that these plants are sometimes induced to grow out of their season, and the consequence of this is, that they are less likely to produce blossoms at the blooming period. Keep the plants, therefore, as dry as can be done without allowing them to shrivel, and as cool as possible, provided the temperature is above the point of congelation. Some of the *Epiphyllums* and *Cereuses*, especially *E. truncatum*, will be showing symptoms of flower buds, and these, if desired, may be removed to the forcing-house, to forward the blossoms. When treated as a stove plant, this *E. truncatum* generally blooms through the winter, and is a beautiful and lively looking plant.

Cyclamens.—These should be kept rather dry, but they are better not dried off, as recommended by some.

Sowing Seeds.—The somewhat leisure month of January should be taken advantage of for sowing seeds of green-house plants, either home-grown or imported; next month will bring its own work, and this will then be less easily got through. With the exception of

those plants which are usually grown in peat-earth, and the seeds of which should be sown in fine sandy peat, the majority of the seeds of green-house plants will vegetate freely and healthily in a mixture of equal parts of sandy loam, peat, and silver-sand. The way of proceeding is thus :—Procure some shallow flat-shaped pots of any size that may be preferred ; the flat form of the six-inch pots are generally used ; in the bottom of these put two or three inches of drainage, in the manner recommended under the head *potting* ; on this lay some moss, and fill up with the soil pressed firm and quite flat, to within an inch of the top ; on this even surface make the form of a cross, by slightly pressing a straight-edge into the soil, this will divide the area circumscribed by the circumference of the pot into four equal parts ; as will be understood by the annexed cut : four kinds of seeds are now to be



selected, as nearly of equal size as possible ; their names must be written on ordinary wooden garden labels, and these labels placed in the centre close together, one facing the centre of each compartment, on which the corresponding seeds are to be evenly, and not too thickly, deposited. Usually this space will afford plants enough, but if more of any kind are likely to be required, it is only necessary to sow half a pot full, or a whole one, or even two or more, instead of a quarter of one ; in either case, the operation is performed in the same way. After the seeds are sown, they are to be covered with fine soil of the same kind as they are sown in, the thickness of the covering depending on the size of the seed ; as a general rule, it is the practice to make the covering about equal in depth to the diameter of the seeds, in the case of all the larger ones ; and in the case of the minute seeds, the very slightest sprinkling that can be given is enough. After sowing, and covering the seeds, the surface of the soil is to be covered with a thin layer of moss, to prevent the evaporation of moisture from the soil, which would render the application of water necessary, and this is by no means to be desired until after the seeds have germinated ; the moisture of the soil, which should be in a medium state, will be enough for the purposes of germination, and the application of a fresh supply is rather injurious than otherwise. This covering must, of course, be removed as soon as any sign of vegetation is perceived. The pots

may be placed, either on the shelves of a green-house, or hot-house, or in a hot-bed frame, where the bottom heat is very mild ; in the latter position they grow more quickly than in the others, and on that account it is to be preferred, where the convenience can be commanded. Some of the larger kinds of a hard texture, and enveloped in a bony covering or shell, have their germination accelerated by placing them in a vessel and pouring boiling water over them, allowing them to stand till it gets cold ; this probably softens the hard and indurated envelope, and thus facilitates the liberation of the embryo plant.

We must now give some general directions, which will be applicable alike to all the preceding divisions.

Potting.—Towards the end of the month this operation will become necessary with many of the free-growing plants ; not, however, on account of that particular season having arrived, but because the plants which it will be proper to repot have commenced growing, and, therefore, require the assistance of art to render that growth as perfect as it can be made. In most cases, it will be proper to transfer the plants to pots two sizes larger than the ones they have been growing in : the particular kind of soil used must depend on the kind of plant. The annexed section

of a flower-pot will show the manner of performing the operation. In all cases, good drainage is essential ; first, a large piece of potsherd must be laid over the hole in the bottom of the pot ; on this a layer, (depending in thickness upon the size of the pot) of broken potsherds, bricks, charcoal, free-stone, or any porous substance, reduced to lumps, about the size of nuts for all the smaller sizes of pots, and as big as walnuts for larger ones ; on this spread a thin layer of moss, to keep the soil from washing among the crocks ; then put in a handful of the roughest part of the soil, and then a little finer, just enough to raise the top of the ball of earth, when placed in the pot, to within a little of the level of the top of the pot, varying from half an inch to an inch, according to its size. Take the plant to be potted in the left hand, and invert it, letting the stem pass through between the fingers ; give the pot a gentle tap on some solid base, and the mass of earth and roots will be disengaged, and will remain inserted in the left hand ; while in that position, remove carefully the potsherds at the bottom, and gently extricate the points of the growing roots ; then set this mass in the centre of the prepared pot, and fill up with the proper soil, keeping it pressed in evenly and



firmly as it proceeds, till within an inch or half inch of the rim, as before observed. After this, give the soil a fair watering to settle it, and the operation is complete. This is the way to pot all growing plants at any period.

Watering.—Much injury is sustained by delicate plants, by their being watered with cold water, while their roots have perhaps been subjected to a temperature several degrees in advance of that of the water administered to them. At this season of the year, therefore, *cold* water should never be used in green-houses; it should always be warmed three or four degrees above the temperature of the house. The application of water, too, must have careful attention; the soil should be kept as nearly as possible at a uniform degree of moisture, that degree being a medium between wetness and drought. To secure this, it is proper to examine the plants daily, applying more or less to *those only* which are becoming dry. Injury from over-watering is often caused by bad drainage, and there is less risk of giving too much, if the soil is properly arranged in this respect. While extreme wetness must be avoided as hurtful, it is equally so to allow an extreme degree of drought to prevail: this should be specially looked to, and guarded against. Water is best applied in the morning, as the dampness arising from it, becomes, to a certain extent, carried off during the day; whereas, if applied at night, it would probably be confined in the atmosphere to the injury of the plants. Those plants that are in a flowering state require more water than those that are merely growing.

Ventilating.—Green-houses require very perfect ventilation. At this time of the year, it is chiefly necessary to carry off damp, and for this purpose, a portion of air should be admitted night and day, when it is not frosty nor very damp. Whenever from these causes it becomes difficult to admit air so often as is desirable, light a slight fire in the morning, and keep it burning through the day; this will admit of moderate ventilation without damage. Avoid currents of air, or admitting it too much at one place: if it were possible to allow it to have ingress at every foot or inch of surface, this would be desirable, but since this cannot be, it should be admitted at as many points as possible.

Temperature.—Keep this at a mean of about 40 degrees, employing fire heat sufficient only to exclude frost.

Routine.—The dead leaves ought to be removed from all plants as soon as they are observable, for two reasons; first, because their presence betokens neglect or indifference; and, secondly, because they often spread

contamination and decay around them. Let the surface of the soil in the pots be frequently loosened up, taking care to remove all greenness and sliminess from the surface, which sometimes appear when the soil has been kept too damp.

When a house for mixed or miscellaneous plants only is possessed, some attention will be necessary to render the general features of treatment somewhat suitable to the various kinds of plants which are cultivated in it. For such a house the temperature must not exceed a mean of 40 degrees; air must be freely admitted; and frost must be excluded. The most tender of the plants, such as Pelargoniums, Heliotropes, &c., should be placed in the best and warmest part of the house, while others of a more robust or hardy nature may occupy the colder, and less favourable positions. Heaths and New Holland plants should get plenty of air and light, and cannot be better placed than on the front platforms, near the glass, as they will bear a little cold; Geraniums would be safer on the central stages, if there is light enough comes to that part of the house. Camellias and large plants of the hard-wooded green-house species, such as Acacias, may occupy the back part of the stages. It is preferable to collect these different kinds of plants into separate groups if possible, as they are then more easily attended to than if indiscriminately mixed; besides it is better for the plants, as the delicate kinds are not then liable to be smothered by the more robust and vigorous growing families. The remarks as to watering and potting given under the separate heads will perfectly apply to the plants when grown together in the same house.

THE PLANT STOVE.

THE same broad and general principles apply to the growth and management of plants under glass, whether inhabiting the pit, the green-house, or the stove; all more or less at this particular season of the year will be enjoying so much of rest and repose, as may be in accordance with their individual natures, and with the particular object of the cultivator. In the stove, however, this is less markedly evident, owing to the perennial verdure maintained by most of the plants, and the slow, yet evident progress which some one or other of them will be induced to make, owing to the warmth and exciting conditions which prevail. The object of the cultivator, therefore, in framing his treatment to suit a general collection, is to restrain this growth as much as possible, by avoiding the stimulants of heat, moisture, &c.; or in other words, keeping the atmosphere of his hot-house as cool and as dry as the safety of his plants will permit.

Temperature.—If this is kept at 55° as a minimum, and 60°, as a maximum of *applied* heat, the plants will not be too much or too rapidly excited. Let the house *always* be *coolest* at night. In the day-time by sun heat 65° may be taken as the maximum, and when the heat rises above this point, air should be admitted to cool the house. In very cold weather let the temperature, both by night and day, be proportionably lower, say at least four or five degrees.

Ventilation.—Beyond the cooling of the house, when the heat rises too high, there is little benefit in ventilating much at this season, provided every thing is kept sweet, and clean, and comfortable, inside; and much injury is often caused by too rashly admitting cold air to the tender foliage of the plants. Whenever the sun shines so as to heat the house above 70°, a portion of air should be admitted; and the same should be done if the artificial heat rises above 65°; but this air should be admitted in very small bulk, and as evenly over the whole house as possible, so that the interchange may be very gradual. Generally the morning, or towards mid-day, is best for ventilation; and as it is not so well done later in the day, care should be taken that the fires do not burn too fiercely to heat the temperature too much towards evening and during the night.

Water.—A portion of water will be required by all the plants occasionally, except bulbs at rest; but very little should be given compared with what is usual when the plants are growing vigorously later in the season, although this comparatively little will be more than is required in the green-house, as the heat here kept up in the atmosphere will take up a greater quantity of moisture; the capacity of air for moisture being increased in proportion to its degree of heat. The water should always be used a little above the temperature of the house; and the plants should be looked over daily. Care must be taken that the plants near the heating apparatus do not dry too rapidly, and suffer for want of water.

Potting.—The general collection of plants will be better not potted at this early period, though any particular plants that may appear to be impatient of growth, or whose roots are in an active state, or which it may be required to excite rather early, may be potted towards the end of the month, if the weather is genial. Plants that are usually plunged in bottom heat may be potted earlier than those standing on the stages. For the manner of doing this, see some previous remarks under *Green-house*.

Insects.—Stove plants are generally affected more or less with insects, of which those of the *Coccus* family are the most hurtful, as well as the most filthy. The spare time that may be

gained at this season of the year is well devoted to the clearing the plants of these insects. If the insects are well routed and removed from all parts of the plants, by carefully rubbing every part with a stiff brush, and the plants are then syringed with a strong clear solution of soot in water, this being repeated every two or three days, there will be little fear of the increase of these pests. The mixtures, of which soft soap and sulphur, tobacco-water and nux-vomica, and similar ingredients, form the bulk, and which are often used for the purpose of destroying insects on plants, are unnecessary; and in themselves scarcely less disagreeable, either to the sight or the smell, than infested plants. Good culture is the best preventive of insects, and good culture is likewise the best cure for them when they have established themselves.

Seeds.—The seeds of stove plants, either of home growth or imported, may be sown any time during the month; the pots should be placed in a hot-bed; or if plunged in damp moss over the flues, or hot-water pipes in the stove, they will germinate as well, or better. Sow them as directed at p. 8. Let the soil be roasted to kill the seeds of any weeds it may contain.

Climbers.—All stove climbers should be pruned, and the branches regulated during this month, before they begin growing, unless it was done in the autumn. Those that flower on the young shoots, cut in closely; whilst those that bloom on short lateral growths from last year's shoots, must have enough of the strongest and best ripened of them retained to furnish a supply of bloom. If they are infected with insects, be particular to have them thoroughly cleansed, as they are difficult to clean when in a growing state. Do not excite them yet.

Achimenes.—A few tubers of each of these may be potted and started into growth, to come into flower early. Pot them singly in three-inch pots, in a very light vegetable soil; place them in a hot-bed-frame, and after standing a week or so in the stove; and shift them as often as the roots become numerous. *A. picta*, one of the finest of winter flowers, will be in bloom; plants of this may be raised by planting some of the leaves in sand, under glasses, and they will be useful when in flower.

Gesneras.—Those that bloomed in the autumn, and have been rested, may now be potted, and very gradually excited into growth; use a compost of half peat, and half loam, lightened, if necessary, by adding sand.

Gloxinias.—Some of these for early flowering may also be potted, and excited gradually. For these and *Gesneras* use pots two or three inches larger in diameter than the size of the tubers.

Amaryllis.—The roots of *Amaryllids* and the allied plants, that have been dormant through the winter, may be brought out and submitted to gentle heat, and moderately watered. Next month, when they have made some growth, they should be put into larger pots, using a rich loamy soil.

Russelia juncea.—To flower this very ornamental plant about next May, let the plants be now slightly pruned in, where necessary, and induced to commence new growth by being potted, and placed in a position favourable to growth. Use good turfy peat and loam for potting.

Lagerstræmia indica.—A splendid shrub, belonging to the natural order of *Lythrums*: may be treated in a similar way with good success.

Hedychiums.—These are Scitamineous or reedy plants, of noble character; they should now be taken from under the stages, and started into growth. Give them plenty of pot-room, a rich, light, loamy soil; and plenty of heat, light, and moisture; and they will flower beautifully. *H. augustifolium*, with scarlet flowers; *H. maximum*, with white blooms; and *H. coronarium*, and *H. Gardnerianum*, with flowers of a yellow colour, are some of the best kinds. Some of these are very fragrant.

Aphelandra.—The specimen plants of this fine autumn flowering stove shrub, should be cut down towards the end of the month, and kept rather dry for a few weeks previously to their being again excited into vigorous growth. *Justicias*, *Eranthemums*, *Poinsettias*, and plants of this habit may be treated in a similar way. These plants will bloom finer in the succeeding season, if not suffered to exhaust themselves in producing bloom this year. A few plants of *Euphorbia jacquiniiflora*, sometimes called *E. fulgens*, may also be so treated, and they will flower three weeks sooner next winter.

Cacti.—The plants of the free-flowering *Epiphyllums*, such as *speciosum*, *Ackermannii*, and others, that are well furnished with flower-buds, may some of them be brought into the stove, to cause them to expand their flowers early. *E. truncatum* will generally be going out of bloom, and should be rested a little by allowing it to get comparatively dry, and setting it in a cool part of the house; the bright red, and the violaceous varieties of this plant contrast admirably.

Hydrangeas.—Though not stove plants, these must be mentioned here. Cuttings of the tips of the last year's shoots, with plump buds at the ends, should be taken off, and planted singly in small thumb pots, in light soil, and placed in moist heat, to root them. These plants, if shifted when necessary, make beautiful objects in the summer.

ORCHIDACEOUS HOUSE.

THERE is no family in the vegetable kingdom containing so great a number of extremely beautiful, fragrant, and remarkably singular-looking plants, as the family of *Orchids*; and they have, in consequence, become so fashionable, that it is by no means uncommon now to find one or even more glass structures in a garden establishment, devoted exclusively to their culture. Hitherto the great objection to their more general cultivation has been the idea that they could not be cultivated except in a very high and moist temperature—two considerations involving both expenditure and personal inconvenience, so far as the amateur cultivator is concerned. As these plants become better known, it is found that while some of the kinds—and those exceedingly beautiful ones—will not succeed except in a high and moist temperature, there are a great number of others, quite enough for all ordinary purposes, that may be made to grow in a temperature but little above that required in a greenhouse, and without that incessant attention which the maintenance of a high humid temperature involves. We shall take care from time to time to notice these particularly. At this season of the year the greater part of the plants should not be in active growth, but in a resting state; and we may take advantage, therefore, of the opportunity, to offer some general remarks on some points of treatment.

Structures.—For those who intend growing these plants, with the fullest possible degree of success, and who are desirous of maintaining a regular succession of bloom, the use of two separate houses is indispensable; one to be devoted to the growing and flowering plants; the other, to those which are in a resting state, and would be injured by the moisture necessary for the growing plants. This arrangement is for those who aim at the greatest possible success. Where those only which succeed in a lower temperature are grown, a dry greenhouse will be found to supply the place of a second house. It may, perhaps, at the outset be alarming to many, to refer to so many houses as being required for these plants, but in truth there is no cause for alarm, for beyond the heating apparatus (which could be a branch from that which warms some other structure,) they do not require expensive erections; a low, flat, span-roofed house, with opaque walls, and glass only for the roof, is sufficient to grow them successfully; although such houses do not look quite so well as those which have upright sashes of glass, at least on one side. It will thus be seen that a mere pit—the least expensive of all plant erections—will supply all the purpose of cultivating these plants with facility and success; and such being the case, the provision of two

structures becomes divested of the idea of extravagant expenditure, and is brought within the means of all who can in any way afford to cultivate exotic plants. Having noticed the desirableness of having two houses, it may be proper to state some of the reasons which may be urged in favour of this arrangement. All, or the greater part of tropical Orchids, then, are found in situations where the seasons are strongly marked by humidity at one time, and by drought at another; these humid and dry periods cannot be combined in a single house; and to have the house alternately dry* and moist, would limit the cultivator to such species as grow and flower at the same time of the year, while during the resting period he would have no bloom whatever. The manner of employing two houses, is to remove the plants to the dry-house, as soon as they have matured their pseudo-bulbs,† or stems; but this must not be quite general, as some of the species flower immediately after making their growth, and these, of course, do not sink into rest till the flowers are past. Such as these should be kept in the moist-house, until the flowers are ready to expand, by which they will be larger; and if then removed to the dry-house, the colours will be more brilliant, the scent more powerful, and the blooms will remain longer in perfection, than if they had been retained in the moist atmosphere. When the flowering is over, the plants should remain in the dry-house till they show signs of growth, when they may be removed to the moist-house, to secure a vigorous growth, which must again undergo the same routine. These growing periods are very different, some commencing in February or March, and others in every month up to October or November; and the time required to perfect their growth is also various, some taking six weeks, and others nearly six months, so that almost constantly some plants will require removing from one house to the other. Such species as do not show flower as soon as they have perfected their bulbs, should be left in the dry-house till they show signs of flowering, when they may be taken to the other until they are ready to expand. All the plants, as soon as the flower-stem is perceived, should be kept in the moist-house while the buds are growing, as by this means they come larger, and in finer proportions; but the expansion of the flower should take place always in the cool-house, in order to increase the intensity both of colouring and fragrance. The temperature of the growing-house (in which, however, few plants will now be in a growing state) may range, at this period of the year,

from 60 to 65 degrees by day, and from 5 to 10 degrees lower at night; and no more moisture should be maintained than the air will take up, if the pathways and walls are constantly damp. The comparatively dry or resting-house should range near 55 degrees by day, and 50 degrees at night, and must get somewhat less moisture, though the term dry is by no means to be understood as implying the entire absence of moisture. This latter house will afford a snitable place for growing those species which thrive in a cooler temperature than the others. Those who grow a limited collection in one small house, and who cannot therefore attend to what is here stated of removing the plants from a moist to a dry atmosphere, and the reverse, must endeavour to regulate the application of moisture, so that the plants may experience something of the same kind of alternation at the different periods referred to; this may, in great measure, be done by keeping all the resting plants together at one end of the house, and keeping that end as dry as possible; they might even be surrounded by a close glass case, to exclude atmospheric moisture. These remarks apply to the season of growth, extending from February to October; in the winter period, including the present month, there is a less marked difference in the atmosphere of what is called a dry and a moist house.

Growing Plants.—When any of the plants begin to show signs of growth, which they will possibly do towards the end of the month, they should be removed to the warmest end of the house, previously to their being potted; but very few will require potting so early as this.

Insects.—The worst insect enemies which infest Orchids are the *cock-roaches* (*Blatta* sp.) which often, when they abound, spoil a young shoot or flower-stem in a single night. They may be destroyed in the following manner:—get some short twigs, a few inches long, and divested of their bark; point one end to stick into the soil, and cover the other end by dipping it in a composition* of spermaceti and arsenic melted together, and well mixed; this composition will remain for months on the sticks, and the insects coming to feed on the spermaceti, are poisoned by taking the arsenic with which it is mingled. A small *American ant*, which also infests them, is destroyed by the same means. The *Woodlouse* (*Aniscus ascellus*) is, next to the cock-roach, the worst enemy that these plants have in the insect form; they are trapped by a number of contrivances, all designed to produce a sheltered retreat, where the insects resort during the day time, and are then looked for, and destroyed. Hollow tubes open at one end, made of bean stalks, or the

* The term must be understood comparatively.

† A *pseudo-bulb* is the term applied to the short bulb-like stems of many of these plants.

* Spermaceti $\frac{1}{4}$ lb; arsenic 2oz.

stalks of other plants that are hollow, are laid among the pots and plants for this purpose. Potatoes or turnips are cut in half, and the halves hollowed out, and laid with the hollow side downwards among the plants, (leaving room for the insects to crawl under) and they will collect in these both for shelter, and also for the purpose of feeding. Whatever form of trap is employed, it should be examined every morning, and the insects which are collected should be destroyed.

Plants going out of flower.—Where the plants, when in bloom, have been removed to the sitting-room, and retained there some time, they will doubtless have become rather dry, as it is not advisable to give them much water in such a situation. If they are of the class that are going to rest, remove them to the dry-house; but if they have to make a growth, have them carefully and regularly supplied with water (always used in a tepid state) and placed in the growing-house.

Moisture.—It has been already stated that the atmosphere of the house should be supplied with as much moisture as it will take up from a continually moistened floor, &c. Few of the plants, at this season, will require water directly applied, except in those cases alluded to above. It will be necessary to see that water does not get collected and lodged at the base of the leaves; this would render them liable to die away.

Cryptopodium.—The plants that have been resting through the winter, may now be taken out of the pots, the old soil removed, the bulbs cleared of the remains of the former foliage, potted in rich turfy loam, and plunged in a mild bottom heat. When they commence growing, let it be encouraged by every possible means.

Phaius grandifolius should be treated in a similar way. It is an evergreen terrestrial plant, and therefore requires watering, *more or less*, all the year. It is an exceedingly beautiful and highly useful plant for removing to the sitting-room. Any of the plants that are now growing freely, and coming into flower, should get a regular but moderate supply of moisture. Several of the *Bletias* and *Calanthes* require very similar treatment.

Dendrobium.—The plants that have been kept dry, and are now showing flower, should receive a moderate supply of water, and should be placed in a favourable position as regards heat and light. *D. nobile*, *D. cœrulescens*, *D. speciosum*, *D. moniliforme*, *D. aureum*, and *D. Pierardi*, and its varieties, will probably be in bloom. The same treatment may be given to other plants showing blooming stems.

Oncidium.—Many of these will be flowering about this time, such as *O. ornithorynchum*, *O. leucochilum*, *O. Cavendishianum*,

and *O. Suttoni*; they should get a fair supply of moisture.

Cœlogyne.—Of these, such as *Gardneriana*, *maculata*, *Walliebiana*, &c., will be showing flower, and should be potted as soon as the flowers are gone past; keep the plants growing, and other flowers will be produced about August, and then after they have perfected their growth, they must be kept cool and dry till the following January.

Plants coming into flower.—Besides those mentioned under various other heads, as *Phaius*, *Dendrobium*, *Oncidium*, and *Cœlogynes*, the following showy kinds, of which the plants may have been rested early in autumn, will probably be in bloom. *Lælia albida*, *L. anceps*, *L. autumnalis*, *L. grandiflorus*; *Zygopetalum Mackaianum*, *Z. crinitum*; *Epidendrum nutans*; *Brassia maculata*, *B. caudata* *Stanhopea Wardii*; *Cyrtorchilum maculatum*; *Peristeria guttata*; *Aspasia epidendroides*; *Trichopilia tortilis*; *Brassavola venosa*, *B. Martiana*; *Cypripedium barbatum*, *C. venustum*, *C. insigne*.

To secure growth only.—If the object is to cause a greater degree of development than ordinary, rather than to induce bloom, which may sometimes be the case with young or small plants, which it is desired to grow into specimen plants as quickly as possible, the plants must be submitted to a greater degree of heat, and also of humidity, and the resting period must be limited. In this way two growths instead of one, and sometimes even three or four may be obtained. Mr. Paxton records the following facts which bear on this point:—On the 20th of May, 1837, I received a very small damaged plant of a new *Stanhopea*; I allowed it to get perfectly dry; it was then potted and placed in a strong bottom heat, with a strong heat above; the plant began to grow in about a fortnight, and at the end of July had perfected a small bulb: the plant was then kept dry for about a fortnight, and was again placed in a strong bottom heat, and in a temperature never lower than 70 degrees, but often amounting in the day to from 90 to 100 degrees. By the end of September it had perfected a second bulb, considerably larger than the first. The plant was again dried on a hot flue for a fortnight, and then removed into a larger pot, and elevated a little above the surface; it was again replunged in a strong bottom heat, and by the end of December had perfected two more bulbs, making four since the commencement. I should here observe that the plant had only one bulb when I received it. The plant was now dried for a month, then repotted and placed as before, in a strong heat; about the first week in April, the plant had made two more perfect bulbs, the process of drying was

again gone through, and the plant placed in strong heat, and it has now (Aug. 31, 1838) nine bulbs made in the short space of fifteen months. The plant was cultivated, with a number of other small ones, in a house that could be kept very hot." This is sufficient to show what may be done if it is required. In fact, by sacrificing the bloom for one entire season, and adopting a course of treatment something like that above referred to, a collection of small plants may be soon converted into specimens of no mean size.

FORCING-HOUSE FOR FLOWERS.

THE decoration of the conservatory depends much on the operations of this house at this time of the year; and no opportunity should therefore be lost of adding to the number and variety of the plants to be forced. Of course the principal part of those intended for this purpose have already been prepared during the previous season; but if the supply should be insufficient, many plants may be at once potted up from the open ground, and introduced to the forcing-house. Rhododendrons, Azaleas, Kalmias, Vacciniums, Lilacs, and even Roses, may be so treated, as well as many other shrubs, and they will flower well; but the plants will of course be considerably checked for another season's growth, without very great care be taken of them when out of bloom. The same plan can be adopted with most of the herbaceous and bulbous plants used for this purpose, as the Carnation, Pink, Forget-me-not, Hyacinth, Narciss, Crocus, Lily of the Valley, &c., if a sufficient stock have not been previously prepared.

Temperature.—The temperature of the house at this period may vary from fifty-five degrees by night, to sixty-five degrees by day, of artificial heat: a few degrees more by sun-heat may be allowed towards the end of the month; but it must be remembered, that the temperature should always be lower during the night than by day, and also that any pots plunged in tan or other material, should have from six to ten degrees more heat than the tops of the plants. When plants are first introduced to the house, they should be placed in the coolest part, and should be brought forward as the buds advance; and they should be kept as near the glass as circumstances will allow; for it must be borne in mind, that the slower a plant is excited into bloom, the finer and the more satisfactory will be the result.

Watering.—Particular attention must be paid to the application of moisture. To ensure a full development of the plants a constant supply of water is indispensable; but it must be so regulated that the soil in which the plants are growing must never have any appearance of being in a soddened or soured state. One

great precaution against this is, to make sure of efficient drainage when the plants are potted; and another is, to water moderately often, but not too copiously. The plants, and the walls and floor of the house, should also be syringed once a day, or oftener if necessary, in order to maintain a moistened and sweet atmosphere.

Removal.—As the plants advance towards perfection, they should be removed before the blossom is fully expanded; if it is at hand, a house with a little lower temperature is desirable for them; but if there is no such convenience, they must be taken at once to the conservatory. If the first course is pursued they will in a few days be sufficiently hardened to bear the cooler atmosphere of the conservatory, and will flower much finer, and the blossom will last longer, than if the changes of temperature had been more sudden.

Succession.—In order to maintain a regular supply, fresh plants should be introduced as those which advance to a flowering state are removed. Except in the case of such an universal favourite as the Rose, of which it is hardly possible to have too many, this seemingly irregular plan will be found to furnish a greater variety than would be obtained by making regular set introductions.

Insects.—Immediately the green fly is noticed on any of the plants, recourse must be had to tobacco fumigation; for so rapid is the increase of this little pest, that the least delay is fatal to many a fine crop of blooms. The best substance to use is common tobacco—not tobacco paper, for although there may be great objections to the former on account of the smell, it is much less disagreeable than the latter. Being provided with the tobacco, get a flower-pot, and knock a hole in the side of it, a little above the bottom; then put in a few red-hot cinders, and lay a portion of tobacco over them; see that it begins to burn freely, then add more tobacco, and over that place a handful of damp, short hay; apply a bellows to the hole in the side of the pot, and keep the tobacco steadily burning until the house is as full of smoke as it is possible to make it; leave the pot or pots of tobacco in the house all night, and examine the insects carefully in the morning; if any appear alive, the fumigating should be repeated again in a day or two; and under any circumstances, it should be repeated every fortnight, or three weeks at the furthest.

Roses.—If these are wanted in any quantity, a regular succession of Provence, damask, moss, and the allied sorts, should be introduced about the first of the month, in order to succeed those advancing to perfection. Those introduced now will be in bloom in March and April. If they are

placed near the flues, pipes, or other sources of heat, they should stand in pans; but anything like stagnant water about the roots must be carefully guarded against. Snifficient warning has already been given against the green fly, to which Roses are very liable; but a still greater pest is to be guarded against here. As soon as the buds of the Roses begin to elongate, a small grub, or worm,* known by the significant name of the "worm i' the bud," is hatched into being with them, and immediately attacks the bud, or point, and eats down to the blossom; it very often happens that the presence of this enemy is not perceived until the damage done by it is irreparable. There appears to be no better remedy or check for this insidious enemy, than to carefully watch the plants, and pick out the grubs immediately they are perceived. They may be generally detected by the infested buds having a more stunted appearance than the others; or if the grub is rather old, by the leaves withering, and being held together in the form of a hood, caused by the grub attaching them together by a sort of web. Chinese and Hybrid Roses require, in general, a lower temperature than that recommended for this house; but at this period they may be brought forward here with considerable benefit, under similar conditions to those recommended for the others.

* This worm is the caterpillar of a small moth (*Lozotania rosana*), which abounds among rose bushes in the summer months, and after pairing, lays its eggs in a small round yellow patch, sometimes on the bark of the lower branches of the rose tree, but as frequently on some contiguous material, such as the palings of a fence. The caterpillar makes its appearance with the first opening of the leaves, of whose structure, in the half-expanded state, it takes advantage to construct its summer tent. It is not, like some of the other leaf-rolling caterpillars, such as that of the lilac (*Lozotania syringana*), contented with a single leaf, but weaves together as many as there are in the bud where it may chance to have been hatched, binding their discs so firmly with silk that all the force of the expanding sap, and the increasing growth of the leaves, cannot break through, and a further expansion is of course prevented. The little inhabitant, in the meanwhile, banquets securely on the partition of its tent, eating doorways from one apartment into another, through which it can escape in case of danger or disturbance. The leaflets of the rose, it may be remarked, expand in nearly the same manner as a fan, and the operations of this ingeniously destructive insect, retain them in the form of a fan nearly shut; sometimes, however, it is not contented with one bundle of leaflets, but by means of its silken cords unites all which spring from the same bud into a rain-proof canopy, under whose protection it can feast on the rose-bud, and prevent the flower from ever blowing. The only methods of preventing the depredations of this insect are in winter, or early in spring, to search for the eggs and destroy them; but should these escape detection, as they frequently will, the evil will not become apparent till the buds are already destroyed, when they must be taken off. No wash nor fumigation can be of the slightest use.

Lily of the Valley—if not potted up in sufficient quantity, may still be lifted, and either placed at once in pots or boxes, or if the plants are wanted for show in pots, more than for cutting the bloom, the largest and most plump buds should be chosen, and planted from eight to twelve or more in a five or six-inch pot, according to the size used; the buds being placed nearly an inch apart. After potting, they should be watered, and set in a cool frame, until they are required to be introduced into heat. The soil proper for them is sandy loam, not too rich.

Achimenes.—Many of these will be putting forth fresh shoots, and should in part be potted, and placed in a favourable part of the house. A light rich soil suits most of them well. Water must be sparingly administered at first. If some of the plants are retarded by keeping them in the pots they have been previously grown in, in a cool place, and withholding water for some time longer, their season of flowering may be considerably prolonged.

Gloxinias, *Gesneras*, and plants of similar structure, require treatment of the same kind.

Amaryllis.—Any bulbs of these splendid plants that may be throwing up their flower-stems, should be immediately potted in rich sandy loam, and brought forward very gradually; keeping them near the glass in order to avoid drawing the stems up weakly, and attending very particularly not to apply too much water, until the pots are tolerably full of roots; then they may be more liberally supplied. As soon as the first flowers begin to show colour, and are about to expand, remove them to the conservatory; the coolness of that structure will retain the bloom in perfection for a much longer period, and also increase the intensity of their colour.

Hyacinths.—When first introduced, should be placed in a dark corner, until the crown of protruding leaves has acquired some degree of greenness; for it is decidedly injurious to expose the blanched leaves of plants immediately to the full action of light. If the bulbs be well rooted, when exposed to a higher temperature, there is little fear but the bloom will be satisfactory. Any of the bulbs that are slow in emitting roots, should be placed aside for later forcing, or to bloom naturally in the green-house, without being stimulated by any degree of heat further than they may experience there.

Tulips.—The same remarks are equally applicable to the early tulips, such as the single and double Van Thol, Tournesol, and other early kinds; the great point being to have the pots full of roots, without which there is more danger of rotting the bulbs entirely, than of blooming them in a satisfactory manner.

Narciss.—These require the same treatment as in the previous cases. Perhaps the best varieties for early forcing are, Bazelman Major, Juno, Monument, Goude Mundi, and Staats Generaal.

Cacti.—A few plants of *Epiphyllum speciosum*, *E. Jenkinsonii*, *E. Ackermanni*, and the related varieties, should now be placed in a warm situation, to bloom during March and April. Water should be very sparingly administered at first, but as they advance, they will require a more liberal supply. The soil they are in should be sufficiently porous to prevent the danger of water lodging about the roots, as that would prove very detrimental to the plants.

Iris susiana.—These singular and beautiful plants, if potted in November, and kept till now in a cool frame, may be induced to bloom if taken to the forcing-house, and very gradually excited by placing them at the coolest end, and slowly increasing the heat; they will flower about the beginning of March, when they had better be taken to the green-house. This is one of the most extraordinary of flowers. The extremely beautiful and fragrant little *Iris persica*, may be potted in five-inch pots, and treated in the same way as the Hyacinth.

Dog's-tooth Violet (*Erythronium Dens canis*) may be potted in five-inch pots, and gently forced into bloom.

Crocuses.—A few pots of the various coloured varieties of *Crocus*, if brought forward, are very ornamental, and will make a very pleasing and useful variety among the plants in bloom.

Snowdrops.—These also may be done in the same way, and are very pretty.

PITS AND FRAMES.

It has been already remarked that well-constructed pits, if kept secure against frost and damp, afford the very best situations for most green-house plants. When they are devoted to this use, the treatment recommended under the head *Green-house* will be suitable. In general terms, the treatment may be summed up thus:—keep them cool and dry, and free from frost; the two former conditions, however, it must be remembered, are comparative, not absolute.

HALF-HARDY PLANTS.—These are the bedding plants to which the flower-garden chiefly owes its gaiety in the summer months; they are properly kept here, although sometimes when there is a spare shelf in the green-house near the glass it may be appropriated to those kinds which suffer most from damp. There is but little to do to these plants now, beyond their preservation from injury. Some will have been struck, or raised as seedlings, early

in the autumn; and these will be well established in single pots, or two or three together, as the case may be. Others, planted as cuttings, or sown later, will be in what are termed store pots; that is, larger pots, according to their size and the kind of plants, containing one or two dozen or more plants in each: these being crowded together rather closely in the pots, are liable to suffer from accumulated damp, and for this reason, care should be taken not to wet the leaves under any circumstances during the depth of winter, and to avoid their getting wetted by drip from the sashes, or any such means; for the same reason, they ought frequently to be examined, and any of the dead or dying leaves carefully removed, and not allowed to lie and decay among the living plants: attention to this is of the very greatest importance to the well-being of the plants. The recommendation given above, to keep the plants comparatively dry and cool, and quite free from frost, is specially applicable in the case of these. Coolness of the atmosphere is absolutely necessary to keep the plants at rest—in order that they may not be stimulated to grow under circumstances so unfavourable as the weather of January always is; this must be secured by admitting air early, late, night and day, and at all times when it can be done without violation of the other principle—viz. that of keeping them quite free from frost. Dryness of the air, and also of the soil and the plants, is to be secured partly by the manner of admitting air, that is, not admitting it in so large quantities when the external air is damp; but it is chiefly to be secured by the mode and degree of applying water to the plants; they should get but a very limited supply, just so much, and so often, according to the actual present state of the weather, as will prevent the soil from getting dry enough to cause the plants to wither; rigid attention to this rule will be one of the best means of avoiding that damping off, or decay of the plants already referred to. A fire of charcoal in the day-time, with air, may sometimes be serviceable for this purpose. As regards keeping them free from frost, whenever it can be done without fire-heat (this is supposing the plants to be in such a structure as that shown at p. 4.) by no means use that; add coverings of any kind, either on the top or at the sides, and except in very severe weather this will be sufficient. If recourse must be had to fire-heat, let it be as slight in degree as will effect the purpose. Coverings of a slight nature, if they are contrived so that they are clear of the frames, and extend all round, thus enclosing an intermediate body of air, will resist more cold than a much thicker covering, laid in close contact with the glass or the sides of the frame.

ALPINES.—These are a different class of plants altogether, but must be protected in a division of the cold pit, apart from other plants, except it be a few hardy herbaceous plants that may happen to be kept in pots. Alpine plants are not tender, in the usual acceptance of the term ; it is not so much cold that they require to be protected from, as fluctuations of temperature and atmospheric conditions. On their native eminences they lie buried during their winter beneath a dense covering of snow, which affords them protection from change of any kind ; and this covering is continued around them till they are at once, and somewhat suddenly, surrounded by the genial influences of spring. What they require even before this month, is to have the pots plunged in dry coal ashes, or sawdust, or some similar material, to keep the roots in as equable a state as possible. For them, too, the frame should have a northern aspect, so as not to be subjected to the exciting influence of partial gleams of sunshine. The other points must be attained by keeping a constant supply of fresh air at all times, except perhaps in the severest weather ; and it is very rarely indeed that water will be required, as the plunging of the pot will in great measure prevent it from becoming frequently dry.

WINDOW GARDENING.

THE display of flowers in the windows of living-rooms, must at this period of the year, be chiefly, if not entirely, dependent on the supply afforded by the green-house or forcing-house ; if, however, the latter has been maintained at the maximum temperature, an ordinary living-room will be unsuitable for the plants which have been kept in it. Those who have these conveniences can of course select a few flowers for their windows from among those they may have in bloom ; and those who have not this means at their disposal, may obtain them from the flower market.

Plants in Bloom.—One of the very best of winter flowering plants adapted for the window, is the Chinese Primrose, (*Primula sinensis*, or *P. prænites*, of some.) This, if sown in the summer, and grown carefully during the autumn in the green-house, will bloom admirably throughout the winter ; they are impatient of too much moisture at the root. The different Cyclamens, too, are pretty and appropriate for the window ; they may be had in bloom in succession, by placing them in the warmer temperature of a forcing-house from eight to ten weeks before they are wanted to be in bloom. The two small red flowering ones, *C. eoum*, and *C. vernum*, and the white and red varieties of *C. persicum*,—the latter species having odorous flowers, are

very desirable. Besides these, some of the most compact plants of *Cineraria* may be selected, and small plants of Oranges, Camellias, and China Roses. Then there are Hyacinths, Lilies of the Valley, Narcissus, Irises, Tulips, and such flowers as these, from which a selection and supply must be drawn.

Evergreens.—Almost as cheerful as flowers themselves, are snug little plants of many of the green-house evergreen shrubs, especially Myrtles. We need not specify others, for any evergreen will answer the purpose of producing a more lively appearance than can be secured if plants are altogether absent. They chiefly require to be kept clear from dust, by occasionally washing or sponging the leaves, and to be watered, perhaps once a week ; or according to the weather.

Geraniums, &c.—There are some common plants, such as Geraniums, Calceolarias, &c. which many amateurs with limited means keep in the windows all the winter. These require to be kept *in the light* as much as possible, and to be placed beyond the reach of frost ; this may be accomplished by setting them close to the window in the day-time, and setting them down in a snug corner of the room at night. They must be watered just enough to keep the soil slightly moistened throughout. Whenever a little air can be given them by opening the windows for an hour or two, it should be done ; but there is an equal risk of injury in exposing them to a cold, cutting, current of air, as in keeping them too much closed up. In general they will have to accommodate themselves, in this respect, to the general arrangements of the family.

Fuchsias.—Fuchsias may be kept in any dark place yet, and may remain just dry enough to avoid their being parched up ; as soon as the buds begin to swell, they ought to be pruned, either down to near the soil, or closely in to a single stem.

Cacti.—From their permanent character, and singular form and appearance, these are suitable for the window, and are interesting even when not in flower, especially the globe Cacti. They simply require to be kept free from frost, and to be watered very seldom, perhaps once a fortnight, or just enough to keep them from shrivelling. The period for growing them is not yet arrived.

Begonias.—The Begonia discolor is a common and very pretty window plant. In the winter it dies down, and nothing but the tuberous root remains ; this is usually placed away in the pot in which it was grown, into a dry cupboard. Towards the end of the month, they may be brought out, and *very moderately* watered. When plants have to be excited anew, as in this case, the

stimulants, in the form of heat and moisture, must be very cautiously applied, a very small proportion being at first administered, and the quantity and frequency of application gradually increased. They need not be potted yet.

Miscellaneous Plants.—Any miscellaneous plant that may be kept in the window, may be treated in the manner recommended for Geraniums.

BALCONIES.—There is not much that can now be done in this department of window-gardening. The only means of decorating balconies in the winter months, is to furnish them with evergreen plants in pots, which should have been prepared and placed in their situations at least two months ago. To some this may appear a very dull way of decorating their windows; nevertheless, it is the only way which can be adopted outside during the rigorous season of winter; and, in truth, it will afford the means of rendering the appearance of the balconies not altogether cheerless. One point should be to secure some shrubs with berries; these, if chosen of different colours, would be nearly as ornamental as flowers. Thus there might be the red and yellow berried Hollies, (*Ilex Aquifolium* vars.); and for a white berry, though the plant is not evergreen, no better one could be chosen than the Snow-berry (*Symphoricarpos racemosa*). Besides these, there are the shrubs with variegated leaves, any or all of which would be appropriate: there is the *Aucuba japonica*; the gold and silver striped Box (*Buxus sempervirens* vars.); the striped Privet (*Ligustrum vulgare variegatum*), and many others. Then there are the spire-like growing Junipers (*Juniperus* sp.), and Cypresses (*Cupressus* sp.); the Arborvitæ (*Thuja* sp.); and the Pines and Firs (*Pinus*, *Abies*, and *Picea* sp.), small plants of any of which are quite appropriate. Of compact, or round-headed plants, there is the Rhododendron; the Hollies, (*Ilex* sp.); the Box (*Buxus* sp.); *Daphne pontica*; the Phillyreas; the Alaternus (*Rhamnus Alaternus*); the common Laurel (*Cerasus Lauro-cerasus*); and Portugal Laurel (*C. lusitanica*); the ash-leaved Berberries (*Mahonia* sp.); and, in fact, all and every evergreen shrub, which can be got small enough to be put into a pot, and neat enough to have some symmetry in its form and proportion. Such plants as these require but little water at this season; in fact, within certain limits, the drier they are kept the easier they may be preserved uninjured; but they must not get too dry, or the foliage will turn brown by reason of drought. The only rule that can be given in this case, is to apply water when the earth looks dry if turned up from an inch or two below the surface; enough should be given to penetrate the whole mass, and if this is done, they will,

perhaps, not require a renewed application within a fortnight, more or less, according to the state of the weather.

THE ROSE GARDEN.

As we commence a new year,—the period which many choose to begin a new subject, commence a new task, or adopt some new amusement,—we might be content to suppose that the reader has his rose-garden in good order, and so content ourselves with giving some directions for the month only; but as we happen to know that there are many rose-gardens neglected, and many amateurs desirous of beginning to cultivate them, we shall commence by going a little nearer to the facts, believing that nothing has been done to the trees and bushes, since they left off flowering; that there are branches of the stock which have been allowed to grow, and suckers to spring up from the root, the whole summer's growth of the wood left on the trees and pods of seed, on many of the vigorously-blooming kinds. This has been the fate of many that we have recently seen, even in good gardens; and the excuse is, that "there has been so much to do this autumn;" and this same excuse does for everybody who has omitted any necessary duty. In the neighbourhood of Wimbledon, we found half the stake useless, because the tie was gone. In Essex, half a dozen of the heads of the trees were blown right off, tearing the eye completely out where it had been growing well for years: but this was through allowing so much head to remain on,—the branches of the summer's growth, in some instances, six feet long, and growing upwards, having been left unshortened; and in a state which a high wind was sufficient to have torn away from anything. Besides all this, with regard to established gardens, there are many persons intend to begin growing Roses, that have not grown them before. The work, therefore, in the *Rose Garden*, consists of everything that ought to have been done the last three months, and has not been done; and of the ordinary operations for the month itself.

Shorten all the Branches of Rose-trees, and especially of standards, that the wind may not have much power over them; and all thin and perfectly useless branches may be cut close. Generally speaking, there will twice or three times as many branches grow as are requisite, and not one unnecessary one should be left on. The only objection to regular pruning in the autumn is, the probability of a frost, that would cause the shoots to die back two or three eyes, which could not, on any account, be spared from the head. On this account, it is the better way to cut off

the branches which are to come away altogether, and to leave the other branches which are to remain two or three eyes longer than they are to be finally left ; so that when pruned at last, the wood may be sound. All that need be said, is, that the head then should be reduced, by curtailing all that can be shortened, and by the entire removal of all the branches that can be spared. This gives more air to those remaining, and reduces the chances of mischief arising from high winds.

Examine the Stakes and fastenings, and if they are loose, or rotten, or weak, get new ones, and make all firm. If they break away, in a high wind, the heads get permanently damaged by bruising, and perhaps, get broken. As a precaution, not always taken, but always necessary, the stake should in all cases be long enough to go partly through the head, that the head itself may be made fast: for as it originally is but an eye, if the whole force of the wind bear upon it, and the stock is made fast, the head will frequently tear away from the slight, or comparatively slight, hold which it has of the stock, although without violence, and with proper support, the stock would sustain the head for many years.

Stocks may be provided and planted at once, in good ground, because a vigorous growth of the young wood is wanted to bud upon, otherwise they would do very well in ordinary mould, if planted where they ought to be. In planting these stocks, cut off all the ragged and bruised ends of the roots, and any very clumsy portion that maybe in the way, regard being had to the necessity of keeping the roots short, and full of fibres, in preference to being straggling and bare. Let them be planted about eighteen inches apart, in rows three feet from each other, to allow of walking between them. Tread them well in, and make a sort of trellis, or espalier rail, the length of the row, so fastened, that all the stocks may be tied to the upper rail. Some omit this till they are worked ; but it is never easier done than while the brier is a straight, unfurnished stick. Some of the close-rooted and dwarf stocks may be potted, in pots of sufficient size to allow of their growth, as it is the fashion to work many Roses that used to be grown on their own bottom. Let the pots be plunged in the open ground, and put a rail to which the stems may be fastened. Examine all the established Roses, and detach all suckers that may have sprung from the root ; also cut off all the portions of the stock that may, through neglect at the proper time, have been permitted to remain.

Purchase Roses, to make new plantations. Buy none with flimsy petals ; rest assured

that colour, habit, size, nothing makes amends for a thin petal : buy no semi-double Roses ; there are plenty of good ones, double enough and thick enough, without being put upon by dealers with either. There are some few double ones. The only sorts to do a grower service, are those which open freely, with plenty of petals, and those thick. Those described in some of the catalogues as show-roses, are no such thing ; and it is a gross deception to call them so. What is wanted is, full double Roses, with thick petals, laid symmetrically ; and there are enough of these to furnish a garden with a first-rate and magnificent collection, in every valuable class, and almost every colour. Mr. Paul, of Cheshunt, will point out some of the Bourbon, the hybrid China, the French, and Provence Roses, that will prove all we require. Roses, capable of being exhibited as Dahlias, are shown a single bloom face upwards ; and, when we see one tree covered with flowers of this description, and another with such as are sent forth to the public, described as show-flowers by respectable catalogues, we shall find no difficulty in appreciating the right ones. There is, however, a class of Roses, or rather a selection of Roses, calculated for cut flowers, which look well in all their stages. Roses of a peculiar habit, such as the Mosses, which never look so well full-blown as in their progress to it ; these may be, and should be, grown separately ; and where the cuttings from time to time will be of no consequence. The Crested Roses, too, are of this description ; though the original "Crested Provence," splendid as it seemed, while novel, has been so completely superseded by the four new Crested Roses of Willison's, as to be now utterly useless : the Curled Crested Moss, the Common Crested Moss, the New Crested Moss, and the Mottled Crested Moss, are worthy of a place in every collection, however choice. Indeed, of twenty-one entirely new varieties brought to the hammer, at the auction-mart, there is not one which does not, in character for novelty, in doubleness, in symmetry, thickness of petal, or some one distinguishing property, beat everything in its class. For this reason, we shall head the list of a few choice Roses with the names and descriptions of these twenty-one novelties, though they will be difficult to get for a season or two, there being so few of them.

Lilac Perfection.—Lilac ; fine double and symmetrical.

Prince of Wales.—Dark crimson ; fine double and symmetrical.

Turtle Dove.—Light rose, dove-coloured centre ; fine double and symmetrical.

Essex Hero.—Bright rosy crimson ; fine double and symmetrical.

Metropolitan.—Dark crimson; fine double and symmetrical.

Mrs. Glenny.—Rich velvety crimson; fine double and symmetrical.

Bridal Wreath.—Beautiful white climber; rapid grower.

New White Provence.—Splendid white; double and symmetrical.

New Crested Moss.—Rose colour, with rich mossy crest and foliage.

Curled Crested Moss.—Rose colour, with rich mossy crest and foliage, every leaf curled.

Mottled Crested Moss.—Rose colour, with rich foliage, and curiously mottled flower.

Crimson Crested Moss.—Dull crimson, rich crest and foliage.

Milk-Maid China.—A pretty China Rose, with stems striped green and white.

Weeping Rose.—A beautiful drooping Rose; abundant flower.

Moss de Meux Minimum.—A moss Rose; small as a Fairy Rose.

Aimee Vibert Crispum.—A very beautiful and distinct white Rose.

Rose Willisonii.—A willow-leafed, thornless, and curious plant.

Tom Thumb.—The smallest Rose in the world.

Blotched-leaved Bengal.—A fine Rose, with foliage speckled with white.

Victoria Ayreshire.—An improvement on this class of Roses.

Souvenir de la Malmaison.—Pale flesh-colour, tinted with fawn, rather large, double, and of form and size above the average.

Brennus.—Bright red, well-formed, large, and handsome; shape above the average, and free opener.

Chenedole.—Bright crimson; size and form nearly like *Brennus*, but not quite so high in centre.

Cabbage Rose.—With all its faults—and they are many—it is worthy of a place in the most choice collections.

Moss Rose.—Equal, in all respects, and, in consequence of the moss, more beautiful before than after it is open.

Triumph de Jansons.—Brilliant crimson, double and symmetrical, above the average.

Boule de Nanteuil.—Purplish crimson; occasionally very double and beautiful, but at first rather flat.

Rose Devigne.—Pink, fine; occasionally very beautiful.

Kean.—Bright scarlet crimson; rather hollow, but now and then a fine show Rose.

La Volupte.—Dark rose, very double; tolerably symmetrical; flattish in the centre, but fine.

Coupe de Hebe.—A shaded pink, very pretty; occasionally a good show Rose.

Le Masque.—A vigorous-growing Rose,

creamy white, and occasionally a superb flower.

Yellow Cabbage Rose.—A most beautiful object, and, though not easily bloomed when the plant is young; a collection without it is comparatively poor.

Persian Yellow.—A bright, pretty, yellow Rose, and next in quality to the above.

White Moss.—Beautiful to cut before it opens.

Bluch Moss.—Beautiful to cut before it opens.

Sage-leaved Moss.—Beautiful to cut before it opens.

The Garland.—A climbing Rose, with hundreds of small blooms, in a cluster, literally covering the plant, with flowers not larger than a daisy, and pretty nearly the same colour; white, with a yellowish centre.

New Village Maid.—Striped, like a carnation; with rose-colour, and white, double, and handsome.

Harrisonii.—Small double yellow; abundant bloomer; small brier-like foliage; very pretty.

Jaune Desprez.—A double Rose, of not first-rate form, though it has thick petals, and lasts well in flower. It is neither yellow, nor white, nor pink, nor salmon colour, but all four shades may be seen; it is powerfully fragrant.

Maria Leonida.—Evergreen Rose; delicate white, beautiful habit, bright foliage.

Madam Hardy.—A fine, pure white Rose, double and handsome.

Maiden's Blush.—A sweet, delicate Rose, very pale blush colour.

Crimson Perpetual.—Valuable for its colour, sweetness, and constant blooming; for among a number of them, some will be blowing all the summer; it is also a first-rate forcing Rose.

Choose all those with good straight stalks, if they are worked plants, and with strong wood, if on their own bottoms. If the soil is strong, and grows coarse vegetables well, or most things flourish in it, very little or no dressing will be required; but if it be light, dig in with each plant a good spadeful of dung, and loam mixed with the surrounding earth. The plant should be placed in the ground the same depth as it was before, and not deeper; for deep planting is bad for anything. The planting of Roses, and the spots where they are to be placed, is, so far as doctrine goes, a complete matter of taste. They must not be near enough to grow into one another, or to interrupt the spreading into a handsome bush, or forming a proper head, according as it is to be a shrub or a tree. In all planting, the bruised ends of the roots must be cut smooth, and all damaged and

broken portions removed. The ground must be well trodden round them, and the earth must be well shook among the fibres ; because when trodden, they ought not to touch each other ; on the contrary, they should have earth between them in sufficient quantity to let each leading portion of root be surrounded with soil. The standards must have stakes driven down, to which they must be firmly tied, to prevent the wind from disturbing them. With regard to the heads, they must be reduced as has already been directed, for standard Roses ; and the dwarf plants should have all the weak and useless shoots removed, and the others may be shortened a little.

THE FLOWER GARDEN AND SHRUBBERY.

PRACTICAL directions for the management of the flower, fruit, and kitchen garden have been so fully and so ably given in the *Annals of Horticulture* for 1845, that it would be difficult to improve, and unnecessary to repeat them ; our present Calendar, therefore, for those particular departments, will be as brief as it can be, to be perfect and comprehensive ; while the practical management of the Rose garden, the green-house, the stove, the orchideade house, the conservatory, and window gardening, will be detailed much more fully than has yet been attempted.

In a climate changeable as that of England, all outdoor operations must necessarily be contingent ; and therefore periodical directions can only be given upon the presumption that the weather be favourable (or such as to require the precautions recommended,) but if otherwise, the operations must, as a matter of course, be deferred until the weather will admit of their being done with advantage. It may also be observed that difference of soil and situation will make an equal difference in the time of applying our instructions ; and consequently, experience of the locality must determine the cultivator, whether to adopt the beginning, middle, or end of the month, for his operations.

Alpine plants, particularly those on rock-work, should be carefully examined ; and wherever the soil has been displaced by wet or frost, so as to expose the roots, fresh mould must be added, or if necessary, they must be replanted.

Anemones and Ranunculuses may be planted in beds or borders. The choice kinds planted in autumn, require protection from frost.

Annuals.—Hardy kinds may be sown in borders for the chance of an early bloom ; they may be cut off by frost, but the chance is worth trying.

Auriculas.—These, being in their winter habitations, must have all the air that can be

given, and but little water. All dead leaves should be picked off and thrown out of the frame or pit ; for nothing is more dangerous than damp, which arises from decaying leaves.

Bulbous roots of all kinds should be in the ground or potted long before this ; but if any are left out of ground they must be planted directly, or they will perish, if not spoiled already.

Carnations and Picotees are generally wintered in pots ; they are as impatient of wet and confinement as any hardy flower that blows ; they suffer mildew from that cause alone, and therefore cannot have too much air or too little wet. The glasses should be moved off every mild day, and be closed in frost and rain ; those in beds may take their chance, but the beds should be well drained and protected from frost.

Clematis, and all deciduous climbers, may be pruned and trained. Many of them will bear cutting down close to the ground, in which case, a little loose manure may be laid over the roots.

Dahlias.—Examine to see if any are shrivelling or rotting ; pot any that are in danger ; they will often start a shoot or two before they rot altogether, and if they are drying too fast, they may be saved by setting to work ; all that are very choice should also be potted and set to work early.

Edgings to flower borders may be planted. Box, Thrift, Gentianella, &c., are recommended, but we have seen nothing yet equal to Box, as, when properly managed, it looks well at all seasons.

Feathered Hyacinths, if not already done, may be planted in borders. These beautiful hardy bulbs deserve more general cultivation.

Flowering trees and shrubs may be planted every month from September to March, but the earlier the better ; nevertheless there is no real disadvantage in planting this month, except for those which bloom remarkably early.

Hyacinths in beds or borders should be covered with hoops and mats, or with litter ; or, if they are in small patches, by an inverted pot placed over each patch.

Kalmias.—These require some protection from wind, as, although hardy, they suffer much from cutting winds, and if not planted in a sheltered spot, should have some artificial shelter.

Manure may be laid on the ground where it is to be used, and may be dug or trenched in wherever the soil is in working condition.

Michaelmas Daisies, and other herbaceous plants and dry roots of hardy border

flowers, may yet be planted or removed, although fully late.

Pansies in pots require to have frame protection, or to be plunged.

Pinks and Heartsease in beds may be preserved in case of hard frost, by covering with litter of any kind rather loosely, but not enough to deprive them of light and air.

Plants generally, bound up for protection, should be examined occasionally, and in mild dry weather should be opened, and somewhat exposed during part of the day.

Plants of all kinds under glass, or in pits for protection, require plenty of air whenever the weather will permit, and little or no water.

Pots of cuttings and pans of seedlings, to turn out in the spring, must be kept dry, and the drainage attended to.

Ranunculus-beds.—Throw out the soil in a ridge on each side, if not done in the autumn, one foot deep at least.

Rhododendrons, Azaleas, Andromedas, and other fine fibrous rooted shrubs may be removed or planted.

Shrubberies may be dug or forked to loosen the soil, and when the distance between the shrubs is sufficiently great, even trenching is desirable.

Soils.—Collect during frosty weather all kinds of soils and manures that are wanted—neats' dung, turfs to rot into turfy loam, sand, clean loam, peat, horse and sheep droppings, leaves to rot, &c., if not done already.

Stocks, Mignonette, cuttings of plants, in store pots, autumn-sown annuals, and all plants intended for bedding out in spring, must be well attended to, and the drainage of the pots frequently examined.

Tulips.—Protect any that are choice, by a covering of some kind, as the slightest frost that reaches the bulb or young spike, damages the bloom—with border flowers, this is of little or no consequence.

Turf and Lawns generally.—Turf may be laid down in good weather as well this month as any other, and is one of the most beautiful features in a well kept and well laid out garden.

All vacant spaces should be dug and left in ridges, especially ground intended for Dahlias, and for the usual bedding out plants. Protection should be given to half-hardy and tender plants generally.

KITCHEN GARDEN.

Asparagus may be forced in a common hot-bed, and produced in a short time. This is done by placing old roots close to each other all over a hot-bed, such as is made up for Cucumbers, with three inches of soil under them; and covering them with three inches of mould, and

then with three inches more, they will come up very soon and very thickly.

Beans may be planted, or rather sown, in rows, two feet asunder, and three or four inches apart in the row.

Cabbages.—Plant out for cabbaging, a foot or eighteen inches apart. Sow seed in a warm, sheltered spot.

Carrots.—Sow on a warm border a few for an early crop.

Cauliflowers, in frames, or otherwise protected, should be kept clear of dead leaves, have air every opportunity, and be watered but seldom. Sow some seed in a frame, or under hand-glasses.

Celery should be earthed up, and in very hard frosts be protected with litter.

Cleanliness in the paths and beds must be attended to, and *dung* should be removed and spread in frosty weather, ready to dig or trench into the ground.

Cucumber and Melon frames.—Where Cucumbers were sown in autumn, the plants will now be nearly or quite in a bearing state; keep the temperature by linings of hot dung, or by fire-heat to about a mean of 70 degrees: give a little air every day, to let off the steam; cover it up well at night. To prevent confusion of the branches, let every shoot that shows fruit be stopped, (that is, have the top pinched out) an inch or so above the joint where the fruit shows; and those that do not show should be stopped beyond every leaf until they do. Sow seeds on a well-prepared hot-bed, for a supply of young plants to put out next month; the temperature of this seed-bed should be very even and regular, at about seventy degrees, or the young plants will suffer from the changes; when the young plants have fully expanded the seed lobes, take them up carefully, and pot them very lightly in small pots of *warmed* very light vegetable earth, filling the pots about half full, and keeping them plunged to the rim in some light material, which will elevate them near the glass. As they gain strength, add soil to fill the pot to within half an inch or so of the rim; this will greatly invigorate them. Whenever they require water, let it be given them *warm*; that is, of a temperature at least as warm as that of the atmosphere they are growing in, or it may be three or four degrees warmer. As to air, a little should be admitted every day if the weather permit; a small crack, by elevating the sash perhaps half an inch at the back, is all that it would be safe to allow them, but this little must be thought of to allow the confined steam to escape. Be cautious of the covering hanging over the sides, and drawing the steam from the outer linings into the frames during the night, which would destroy the plants. One advantage of admitting air is,

that it tends to keep the plants cooler, and this imparts sturdiness and vigour.

Lettuces and all kinds of salads under cover must be kept dry.

Mint, and other herbs which die down to the ground, should be potted, to be placed in hot beds, when required for use.

Mushroom beds, if not made before, may be made now, but should have been made in September.

Onions.—Sow a few in rich ground, and clear any of the autumn-sown ones.

Parsley.—Sow any that is in good order for use, and throw litter over when there is any indication of a frost.

Peas.—Sow at the beginning and at the end of the month; earth up those which are above ground, on the shady side, that the ridge may protect them from cold winds.

Plants for seedling.—Towards the end of the month plant out Beet, Cabbages, or Savoyes, Carrots, Parsnips, and Onions, for seed. Select handsome specimens of each.

Rhubarb and Sea Kale, may be forced by covering with a pot, and surrounding it with hot dung.

Small Salads, Radishes, &c., if wanted before their season, may be planted, or sown in hot-beds, or in the ground, covered with a hand glass.

Spinach.—Keep clear from weeds, and pick the well-grown leaves only for use. Sow also, for succession, in drills, or broad cast.

Winter crops.—Hoeing between the rows, and earthing up round the stems, should be attended to in mild, dry weather.

THE FRUIT GARDEN AND ORCHARD.

TREES of all kinds may be planted in open, favourable weather, if the ground be dry enough to work well. If the soil be good and moderately deep, there will be no occasion to dung it. Plant high in the ground; the collar of the root should be fairly above the ground; deep planting is often fatal, and always very injurious.

Gooseberries and Currants.—These may be planted in quarters by themselves, or in a row across a garden; it is a bad plan to have them straggling about a garden without order or regularity. They should be pruned also this month.

Raspberry canes should also be planted in rows, four feet by three, or thereabouts.

Espalier fruit trees should be pruned and fastened where they are loose; all the branches which grow outwards from the trellis, and will not range well, should be cut away.

Wall fruit trees should be pruned and trained before this, but if not yet done, must be done immediately.

Pruning generally, among standards as well as wall trees, should be done, if not already performed.



HABROTHAMNUS CORYMBOSUS.

(Endlicher.)

THE CORYMB-FLOWERED HABROTHAMNUS.

THIS plant is an erect, much-branched shrub, with somewhat herbaceous stems, and alternate, large, ovate-lanceolate leaves, attached to the stems by a shoot-stalk. Towards the ends of the main branches smaller ones are produced, each of which is terminated by a corymb of flowers. The flowers are funnel-shaped, gradually widening upwards, then contracting, having a pitcher-shaped appearance; the limb is divided into five long narrow segments, which become reflexed. These flowers, which are produced in profusion, are of a deep rose colour, and very ornamental.

This species is a native of Mexico; and has flowered in the Royal Botanic Garden of Kew, to which it was sent by Mr. Low, of the Clapton nursery. It is a plant of very rapid growth, requiring only the protection of the green-house in the winter season, and in summer thriving freely in the open air. Plants of this nature require to be well attended to when young, to cause them to produce a sufficient number of shoots to form a handsome plant; and they ought not to be planted in a soil and situation too much conducive to vigorous growth; for rapid growing plants of this half-fleshy character are found to thrive better when the development of them is not too freely induced by stimulants of this kind. A large plant of this kind would doubtless make a good display in the flower garden, as a single plant; and when so required, it

must be planted out as early in the season as possible, to be safe from frost.

It belongs to the natural order of Solanaceæ; and in the Linnæan arrangement to Pentandria monogynia.

HEATING DISTINCT BUILDINGS.

It is not very difficult to imagine that if a pipe, to convey hot water, were to go a very long distance either underground, or exposed above ground in the open air, the water would be very much cooled before it reached its destination. This, however, is easily obviated by placing around the pipe any non-conductor of heat. The more certain mode of doing this, is to have a wooden trough made large enough to give an inch of room all round the pipe; this trough is to be fixed so that the pipe shall occupy the centre, and the vacancy round it is to be stuffed with pumice stone pounded, and then be covered, so that there shall be an inch of pounded stone all round the pipe, enclosed in a wooden case. It matters but little, comparatively speaking, whether this extends a hundred inches or a hundred yards, the heat of the water will be very little diminished by its passing; and I am not quite sure whether boiling water may not be conveyed a much further distance than has been imagined without losing any important quantity of its heat; nor does it matter much whether this be carried on in the earth or above it.

G.

CUTTINGS FOR STRIKING.

For many years the commonly received notion has been that all slips of plants for striking should be cut up to the under part of a joint, and thousands act upon it to this day; yet many hard-wooded plants strike as well in the middle between two joints. Upon this principle Mr. Fairburn struck *Camellia japonica* from pieces containing only one joint to grow the plant from, and a piece of the plain wood left below the joint, from the bottom of which, all round, the fibres shot in abundance to form a root: cuttings thus struck had fine roots when the plants had hardly started. It has been said that this originated at Mr. Kelley's, of Blackheath, and had prevailed for very many years before the present branch of the family became possessed of the nursery. Whether it be so or not, it is worth any body's notice to try the effect upon any hard-wooded species. We are informed by one cultivator, that he has succeeded beyond his expectation with *Fuchsias*, and with layers of *Rhododendron* and *Azaleas*; and it is of the utmost importance to be able to obtain plants from a single, instead of at least two joints; for without one above

to give the growth, nothing can be done; whereas, upon the ordinary plan of striking cuttings, there was necessarily a joint at the bottom, so that a branch of six joints would make six plants one way, and only three the other. Let this fact be impressed on the mind of amateur Horticulturists.



OXALIS SENSITIVA.

(*Linnaeus.*)

THE SENSITIVE WOOD SORREL.

This is quite a small plant, and well suited, both from its size and interesting properties, for a Wardian case. It is not showy by any means, but its leaves are remarkably sensitive, and fold up on being touched, like those of the common sensitive *Mimosa*. Indeed, Rumphius states, that in Amboyna, this property is possessed by it in so extraordinary a degree, that the leaves cannot bear that the wind should blow on them, or even that they should be breathed upon; at the least irritation they close up, and the plant looks as if dead. This property is not possessed in so marked a manner as this, by the plants cultivated in this country, but they are certainly quite sensitive.

The plant is an annual; it has a dwarf stem, from which a tuft of pinnated leaves proceeds; these have from eight to twelve pair of oval leaflets, from among these rise numerous flower-stems, having several small yellow flowers at the top of each. It is found wild all over the tropics of Asia. It was raised in the Horticultural Society's garden, from seeds sent from China, by Mr. Fortune; and is also cultivated at Kew. It often springs up in mould received among plants from the East Indies.

It is of very easy culture in the hothouse, where it, no doubt, will prefer a shady place, similar to that in which our native wood-

sorrel delights. It belongs to the natural order Oxalidaceæ.

HYACINTHS AND OTHER BULBS, IN MOSS.

ONE of the prettiest methods of blooming Hyacinths in a house, is to procure a large saucer, or a dish of similar form, and place moss in it level with the edge; this may be filled with water, and the bulbs be placed on the moss; one tall growing one in the centre, and six of a more dwarf kind round it. Moss of a good colour should then be tucked between them, so as to form a complete ornament. The only care required after this is to keep them moist and near the light, and occasionally to turn the dish round, when they grow too much one way. If this dish be placed in a fancy basket, with cross handles, arched from one side to the other, the flower-stems may be easily supported; though the roots spread all over the bottom of the dish, and enable them to stand well, unless they become too much drawn up and weakly, which is sometimes the case, when they have been kept too dark. The Vanthol Tulips will also grow well in the same manner, as well as Crocuses, which flower very freely in similar contrivances. A common tea saucer will hold a dozen well, and they almost instantly strike their roots among the moss, and spread their fibres under it. This, indeed, is by far the best method of flowering the Crocus, for they look very uninteresting in single glasses, compared with their appearance when in masses of a dozen.

NEW PLANTS AND SHRUBS,

INTRODUCED OR MADE KNOWN DURING THE YEAR 1845.

ACHIMENES ARGYROSTIGMA, *Hooker*. (The silver-spotted Achimenes).—An herbaceous stove perennial, propagated by small scaly tubers, and producing large obtuse elliptical leaves, spotted with white: the flowers are small, whitish, mottled with red, gaping, and produced in upright racemes or loose spikes. It is from New Granada; and flowers in the summer months. Figured in *Botanical Magazine*, t. 4175. Natural order, Gesneraceæ.

ACHIMENES GRANDIFLORA, *De Candolle*. (The large-flowered Achimenes).—A good deal like the now well-known *A. longiflora* in habit and general appearance, but with large, rich, rosy crimson, gaping flowers. It requires the same culture. It grows in Mexico, upon shady rocks of the Barranca de Tioselos, near the Hacienda de la Laguna. It is, perhaps, one of the most handsome of the family, all of which, without exception, are highly worth cultivating. Not new. Figured in *Botanical Register*, 1845, t. 11.

ALLAMANDA CATHARTICA, *var. grandiflora*, of gardens. (The large-flowered Allamanda).—Almost every one has some knowledge of *Allamanda cathartica*, a splendid climbing plant, of strong growth, and producing bunches of large yellow flowers. Whether the present is another species, or only a well-marked variety, is not quite defined: some consider it a species. From that plant it differs in having larger flowers, usually upwards of four inches in diameter; in being fuller coloured; and in not having so much tendency to climb. Indeed, under good management, it can be kept as a bush of compact form, two or three feet in size. It has leaves usually three in a whorl, oblong lance-shaped; and the large pale-yellow trumpet-like flowers are produced in clusters of four or five, at the ends of the young shoots. It is a stove plant, flowering throughout the summer and autumn months. Mr. Gardner found it in Brazil, and introduced it by seeds to this country. Figured in *Paxton's Magazine of Botany*, p. 79. Natural order, Apocynaceæ.

ANEMONE OBTUSILOBA, *Don*. (The obtuse-lobed Wind-flower).—This hardy alpine plant is the same as *A. Govaniana*, of Wallich, whose name gives place to that of Don. It grows about six inches high, and bears a few-flowered umbel of small white flowers, just elevated above the broad leaves, which are formed with three blunt lobes, or divisions. It inhabits the Choor mountain of the Himalayas, at an elevation of from 10,000 to 12,000 feet. It flowers in June and July. Figured in the *Botanical Register*, 1844, t. 65. Natural order, Ranunculaceæ.

ANTHOCERCIS ILICIFOLIA, *A. Cunningham*. (The holly-leaved Anthocercis).—A suffruticose, perennial, green-house plant, growing from four to six feet high, with numerous branches, which are leafy below, and at the upper part furnished with flowers. The leaves are obovate, and spinulose-dentate; in the small branches these leaves become gradually smaller, giving place to the flowers; the flowers are bell-shaped, with five narrow reflexed segments; the tubular part is marked with greenish lines outside, and dark red coloured ones inside. The flowers are rather elegant, but the habit is straggling. It is from the Swan River colony, and was raised by Mr. Moore, of the Royal Dublin Society's Botanic Garden, at Glasnevin, Ireland. It requires a warm green-house in winter, and to be kept cool in summer; and will grow in a mixture of sandy loam and peat. Figured in the *Botanical Magazine*, t. 4300. Natural order, Scrophulariaceæ.

ANIGOZANTHOS PULCHERRIMUS, *Hooker*. (The prettiest yellow Anigozanthos).—A very handsome green-house herbaceous plant, with

linear-falcate, sword-like leaves. The stem rises two or three feet high, bearing a large branching panicle, with funnel-shaped yellow hairy flowers, which are densely situated towards the end of each division of the stem. Altogether, it forms a very peculiar-looking and somewhat handsome plant. It is from the Swan River settlement. Figured in the *Botanical Magazine*, t. 4180. Natural order, Hamodoraceæ.

AOTUS GRACILLIMA, *Meisner*. (The slender Aotus).—A pretty green-house shrub, from New Holland, rather tall-growing, with twiggy branches, and slender linear leaves. The flowers small, butterfly-shaped, lively yellow spotted with red, are produced along the strong shoots in such profusion near the extremities, as to completely envelope them for several inches in length. It is a Swan River species. Figured in the *Botanical Magazine*, t. 4146. Natural order, Leguminosæ.

APHELANDRA AURANTIACA, *Lindley*. (The orange-scarlet Aphelandra).—A handsome stove shrub, in the way of *A. cristata*, with opposite, oblong, smooth, shining, dark-green leaves, which are wavy on the margin, near the base; the flowers are ringent, in erect, dense spikes; at first orange-yellow, changing to a deep orange; the lower lip is divided into three nearly oval lobes. It has been introduced from the continent to some of the metropolitan nurseries, under the name of *Hemisandra aurantiaca*. It is a valuable addition to these plants, requiring the same treatment as *A. cristata*. It was discovered in Mexico, by Messrs. Linden and Funcke, collectors for the Belgian government, and introduced to the royal garden at Lacken, and through Mr. Makoy, of Liege, it reached the nurseries of this country. Figured in the *Botanical Register*, 1845, t. 12. Natural order, Acanthaceæ.

APHELEXIS SPECTABILIS, *var. grandiflora*, of *gardens*. (The large-flowered showy Aphelexis).—This is a most beautiful green-house plant. It was accidentally raised from some imported seeds of *A. spectabilis*, at the Westerham nursery. The flowers are large, of a peculiar round or cup-shaped form, of a deep crimson purple lour, with a rich golden centre; they are "everlasting," like those of the other kinds of Aphelexis. Natural order, Compositæ.

ARCTOSTAPHYLOS NITIDA, *Bentham*. (The shining-leaved Berberry).—An evergreen half hardy shrub, resembling an *Arbutus*. It has oblong lance-shaped leaves, and branched erect racemes of pitcher-shaped white flowers. Introduced from Mexico. Figured in the *Botanical Register*, 1845, t. 32. Natural order, Ericaceæ.

AZALEA LÆTITÆ, *Herbert*.—A garden hybrid hardy Azalea, raised by the Hon.

and Rev. W. Herbert, and named in compliment to Mrs. Herbert. It bears large clusters of white flowers, with a dash of orange yellow on the central division. It was raised between a *Rhododendron ponticum*, and an *Azalea*. Figured in the *Botanical Register*, 1845, t. 51.

AZALEA LUDOVICIÆ, *Herbert*.—A garden hybrid hardy Azalea, a sister seedling to the *A. Lætitiæ*. It has whitish flowers, with a gay rosy tint suffused, and is a very handsome variety. Figured in the *Botanical Register*, 1845, t. 60.

AZALEA INDICA (green-house Azaleas).—Natural order, Ericaceæ.

var. magnifica.—A large purple second-rate variety, raised by Mr. Gaines.

var. rubescens.—One of Mr. Gaines's, with light scarlet flowers; second rate.

var. Vesta.—Raised by Mr. Bruce, gardener to B. Miller, Esq., of Tooting; the flowers are fine white, of medium quality; and the plant has rather peculiarly narrow leaves.

var. Storeyana.—A pure white variety, inferior to the old white (*A. i. ledifolia*).

var. rosea elegans.—One of Mr. Ivery's, of Betchworth: the flowers are pale rose coloured, and pretty, of tolerable good form.

var. Iveryana.—A variety, raised also by Mr. Ivery, with large pure white flowers.

var. striata formosissima.—Also from Mr. Ivery; in the way of *A. Gledistanesii*; but not so good in quality.

var. latertia pulchra.—Also from Mr. Ivery; the flowers are light rose-coloured; not above second rate.

var. Palmerii.—This is a large bright rose-coloured flower, of good properties, raised by Mr. Falconer, gardener to A. Palmer, Esq., of Cheam.

var. Murrayana.—This is a hybrid, raised by Mr. Kinghorn, gardener to A. Murray, Esq., of Twickenham, and received a prize at one of the exhibitions of the Royal Botanic Society. It is a large bright rose-coloured flower, of good properties.

var. Duke of Devonshire.—A hybrid, raised and exhibited by Messrs. Lucombe and Co., of Exeter; the flowers are light scarlet, and of good form.

var. semi-duplex pura.—A hybrid of Mr. Smith's, of Norbiton. It is a semi-double rosy-pink variety; not above second rate.

var. semi-duplex purpurea rosea.—Also one of Mr. Smith's: the flowers are reddish purple; not above second rate.

var. aurantia major.—Also one of Mr. Smith's: the flowers are orange red; not above second rate in quality.

var. Broughtonii.—This is a handsome variety, with large, well spotted flowers, of a light rosy pink colour, and of good shape.

BACKHOUSIA MYRTIFOLIA, *Hooker*, and *Harvey*. (The myrtle-leaved Backhousia).—A neat little green-house shrub, found by Mr. James Backhouse, in the Illawara district of New South Wales; and dedicated by the above-named gentlemen, to perpetuate the memory of their mutual friend, who, in the midst of arduous labours, of a totally different character, still found time to collect and describe many interesting plants. In New Holland it forms a small tree, sixteen feet high, with opposite, ovate acuminate leaves, resembling those of a myrtle; and corymbs of small greenish white flowers, of which the most conspicuous parts are the outer covering (calyx), and the thread-like filaments (stamens) which occupy the centre of the flowers. It strikes readily from cuttings; and flowers when quite small. Figured in the *Botanical Magazine*, t. 4133. Natural order, Myrtaceæ.

BARBACENIA SQUAMATA, *Hooker*. (The scaly-stalked Barbaenia).—A stove herbaceous plant, with a tuft of long narrow leaves, and orange-coloured flowers. It is from Brazil. Figured in the *Botanical Magazine*, t. 4136. Natural order, Hæmodoraceæ.

BEGONIA ALBO-COCCINEA, *Hooker*. (The scarlet-and-white flowered Elephant's Ear).—One of the most lovely of a lovely family. It is from India, and was raised and flowered in the Royal Botanic Garden of Kew. It is a stove herbaceous species, with large peltate, almost reniform leaves, possessing however the oblique character peculiar to these plants. The flowers are produced on a branching, many-flowered, lax panicle, from a foot to a foot and a half high; they are red externally, and white within; and being produced abundantly, they are very showy. It blooms in spring and summer. Figured in the *Botanical Magazine*, t. 4172. Natural order, Begoniaceæ.

BEGONIA RAMENTACEA, *Paxton*. (The scaly-stalked Elephant's Ear).—This is a showy plant, with short thick stems, and rather large obliquely ovate leaves, bright green and smooth above, sanguineous beneath, and there studded with little bundles of hairs; the stalks of the leaves are very curiously covered with depressed fringed scurfiness, from which circumstance it derives its name. It bears cymose clusters of flowers, rising a few inches above the leaves, and spreading out gracefully; the flowers are whitish or flesh-coloured, and as these decay, they are succeeded by rich crimson seed pods, which are hardly less ornamental. It is a stove species, flowering in the autumn, and is one of the finest of the genus. The plant was imported from Brazil, two or three years ago, but is still very scarce, and but little known. Figured in *Paxton's Magazine of Botany*, p. 73.

BEGONIA RUBRICAULIS, *Hooker*. (The red-

stemmed Elephant's Ear).—A stove herbaceous plant, with oblique, large, cordate, glossy, slightly hairy leaves, on footstalks from four to six inches long. The flowers, which are borne in a branching panicle, at the top of the scapes (flower-stems), are large and showy; and consist of five obovate petals, two of which are blush-red, and the other three creamy, scarcely tinged with blush: the male blossoms are rather larger than the female ones. The short petioles, and much longer scapes, are slightly hairy, and of a fine bright red. The triangular capsule (seed-vessel), peculiar to the genus, has two of its angles formed into slight wing-like projections, the other being much larger, and elongated, with its point curved upwards. The origin of the plant is not known.

BEGONIA STIGMOSA, *Lindley*. (The spotted-leaved Begonia).—Rather a pretty species of this handsome tribe. It has a short stem, and oblique cordate leaves, the stalks of which are furnished with scaly appendages. The flowers are white, not very large, produced in cymose panicles. The leaves are marked with brownish-purple spots.

BELLEVALIA SYRIACA, *Herbert*. (The Syrian Bellevalia).—This plant was sent to Spofforth (Mr. Herbert's), from Aleppo, by the Hon. W. Fox Strangways; but it is not ascertained whether the roots were found near Aleppo or Damascus. The leaves are nearly a foot long, and half an inch wide; they are glaucous, channelled, and acute. The flower-stem (scape) rises from five to ten inches high, and the flowers are borne nearly erect; they consist of a pale blue tubular portion, and a whitish limb with rufous tips. It is quite hardy. Natural order, Liliaceæ.

BERBERIS ACTINACANTHA, *Martius*. (The ray-spined Berberry).—A sub-evergreen hardy bush, of small size, with thorny branches, furnished with small roundish ovate leaves, and numerous yellow flowers, which open in April, May, and June. It is from Chili. Figured in the *Botanical Register*, 1845, t. 55. Natural order, Berberaceæ.

BERBERIS TRIFOLIATA, *Hartweg*. (The three-leaf-letted Berberry).—A very handsome, half-hardy evergreen shrub, with prickly holly-like leaves, growing three together, and bunches of handsome yellow flowers. It is from Mexico. Figured in the *Botanical Register*, 1845, t. 10.

BIDWELLIA GLAUDESCENS, *Herbert*. (The glaucescent Bidwellia).—This plant was introduced to Europe, by Mr. Bidwell, of Sydney, after whom it has been named. It naturally inhabits an elevated tract of table-land called New England, which is situated on the south-eastern mountains of the Australian continent. It has linear, glaucous leaves, flat above, and rounded beneath; and a branching flower-

stem: the flowers are white, with regular, broad, ribbed petals, marked with blush-red lines. Natural order, Iridaceæ.

BLANDFORDIA INTERMEDIA, *Herbert*. (Intermediate Blandfordia).—A beautiful greenhouse herbaceous plant, with rigid, channelled, tufted foliage, and erect racemes of large, pendulous, trumpet-shaped flowers. It has flowered at Spofforth, bearing twenty blossoms; it is allied to *B. nobilis*, but is altogether a more robust and much finer plant. Native of New Holland. Natural order, Liliaceæ.

BLANDFORDIA MARGINATA, *Herbert*. (The rough-edged Blandfordia).—A greenhouse herbaceous plant, with long, linear sheathing leaves, collected at the base; from these the flower stem rises erect, and bears a long conical raceme of flowers, crowded together towards the top, and each attached by a little stalk directly with the main stem; the flowers are drooping, and individually of a lengthened conical figure, resembling an elongated funnel; they are deep orange, with a yellow interior. It is a native of Van Diemen's Land, growing abundantly on Rocky Cape, in poor quartz sand, and where the soil is rather wet. It naturally requires a good supply of water in the summer season, and air at all times when the weather is favourable. In the winter, on the contrary, it should be kept rather dry, on an airy shelf, well exposed to the sun. Figured in the *Botanical Register*, 1845, t. 18.

BOLDOA FRAGRANS, *Jussieu*. (The sweet-scented Boldu).—This is a small greenhouse bush; in its native country, Chili, growing from fifteen to twenty-five feet high. It is of compact bushy habit, with greyish branches, and roundish ovate evergreen opposite leathery leaves, with a rough surface. The flowers are small, whitish green, somewhat daisy-like, though very different in structure; they are produced in little terminal branching panicles. The fruit, which is only known in its dried state, is a little drupe as large as a haw, apparently black, and extremely fragrant. The plant has a highly aromatic odour in every part. In Chili the plant is much valued; its wood forms a charcoal preferred by smiths to all others; and the fruit is eaten by the natives. The leaves of the female plant are usually larger than those of the male. It is a greenhouse shrub, growing freely in sandy loam and peat. Figured in the *Botanical Register*, 1845, t. 57. Natural order, Monomiaceæ.

BOUVARDIA FLAVA, *Decaisne*. (The bright yellow-flowered Bouvardia).—This handsome plant has been raised by M. Van Houtte, of Ghent. It is a small bushy plant, well suited for bedding out in summer, and bears a profusion of bright yellow tube-shaped flowers. It also forms a fine ornament for the greenhouse. Figured in the *Florist's Journal*,

for December 1845. Natural order, Rubiaceæ.

BROWNEA ARIZA, *Bentham*. (The Ariza Brownea).—In Peru a tree thirty or forty feet high, with large lobed leaves, and clusters of rich scarlet flowers from the points of the shoots. A few young plants have been raised in the Horticultural Society's gardens. From the woods near Guaduas, in the province of Bogota. Natural order, Leguminosæ.

BURTONIA BRUNOIDES, *De Candolle*. (The Brunea-like Burtonia).—A dwarf-growing greenhouse shrub, from New Holland. It has villous branches, short linear leaves, and rather flat terminal heads of yellow pea-shaped flowers, produced in June. The plant appears to possess a vigorous habit. Natural order, Leguminosæ.

CAJANUS BICOLOR, *De Candolle*. (The two-coloured Pigeon-pea).—This is cultivated for its seeds both in the East and West Indies. It is an upright growing plant, with pinnated leaves, composed of three oval-lanceolate hairy leaflets. The flowers are yellow, striated with red on the outside; they are situated in corymbs of four or five together in the axils of the leaves, and they are succeeded by long narrow pods, containing four or five seeds each, the favourite food of wild pigeons. It is a half-hardy annual or biennial, growing about eighteen inches high, and flowering rather freely from June to August. Figured in the *Botanical Register*, 1845, t. 31. Natural order, Leguminosæ.

CALANDRINIA UMBELLATA, *De Candolle*. (The umbel-flowered Calandrinia).—This is from the mountain regions of Chili. It is a perennial herbaceous plant, with little tufts of linear hairy leaves, and large deep rose-coloured flowers, of the size of a shilling, which, however, require sunshine to open them. Altogether the plant has much the appearance of the dwarf *Mesembryanthemums*; and like those plants, it is well suited for rock-work in sunny spots, or for planting on sunny banks: it grows only a few inches high, and sends out all round numerous spreading stems, bearing each an umbel of flowers, which look very beautiful. In the climate of Devonshire it has stood out the winter of 1844, and may probably be found to be half-hardy. Messrs. Veitch exhibited in flower in July, 1845. Also called *Talinum umbellatum*. Natural order, Portulacaceæ.

CALATHEA VILLOSA, *Lindley*. (The shaggy Calathea).—A curious herbaceous stove plant, with large oblong stalked leaves, and tall flower stems, bearing at the top a cylindrical spike, composed of cucullate scales, enclosing the base of the pale yellow two-petalled flowers. The whole plant is shaggy. It is allied to *Maranta* (the Arrow-root plant), and re-

quires similar treatment. A native of Demerara. Figured in the *Botanical Register*, 1845, t. 14. Natural order, Marantaceæ.

CALCEOLARIA ALBA, Ruiz and Pavon. (The white-flowered Slipperwort).—A small shrubby species from Chili. It has narrow, opposite, remotely serrated leaves, and numerous elongated panicles of small clusters or thyrses of flowers, which are nearly pure white. It has been introduced by Messrs. Veitch and Son, of Exeter. It flowers in September, and is a very handsome plant. Figured in the *Botanical Magazine*, t. 4157. Natural order, Scrophulariaceæ.

CALCEOLARIA FLORIBUNDA, Humboldt, &c. (The many-flowered Slipperwort).—This is a shrubby species of *Calceolaria* from Quito. It is an erect growing plant, with opposite, oblong, lance-shaped leaves; and ample flowered terminal corymbs of sub-globose, pale yellow flowers. It will doubtless be suitable for a green-house; though, as the city of Quito, in the neighbourhood of which it is found, is 11,000 feet above the sealevel, it may, probably, be sufficiently hardy to grow, as many other species do, in the open ground in summer. It seems to bloom throughout the summer season. Figured in the *Botanical Magazine*, t. 4154.

CALLIANDRA TWEEDIEI, Benth. (Mr. Tweedie's *Calliandra*).—This is a mimosa-like shrubby plant, with compound, or bi-pinnate leaves, and large heads of about twenty flowers from the axils; the beauty of the plant resides in the long red filaments of the stamens, which give the heads of flowers the appearance of a bottle-brush. It is a stove plant, native of Rio Grande, and Rio Jaquery, in South Brazil. It was first flowered at Knowsley, the residence of the Earl of Derby, in March 1845. Figured in the *Botanical Magazine*, t. 4188. Natural order, Mimoseæ.

CALIPHURIA HARTWEGIANA, Herbert. (Hartweg's *Caliphuria*).—A bulbous plant, found by Mr. Hartweg in New Granada, near Guaduas. It has ovate bulbs, and somewhat oval, pointed, depressed leaves, six inches in length, borne on short foot-stalks. The flowers are funnel-shaped, about an inch long, and are produced at the top of the stem (scape), in a many-flowered umbel; the tube is green, and the reflexed spreading limb, white, with yellow anthers. It has the appearance of an *Enerosia*; and is allied both to *Euryeles*, and *Griffinia*. Natural order, Amaryllidaceæ.

CALLIPSYCHE EUCROSIODES, Herbert. (The two-coloured Fairy-bloom).—This is a very curious and ornamental bulbous plant, from the west coast of Mexico. Its leaves are a foot long, and four inches broad; the flowers are drooping from the top of the stem, which grows two feet and upwards; they consist of a short green tube, and a limb about an inch

long, of six obtuse scarlet segments; the stamens project beyond the flower more than three times its length. It seems to like shade, and flowers in March, before the leaves. It requires the same treatment as green-house bulbs; requiring a somewhat higher temperature when in full growth. Figured in the *Botanical Register*, 1845, t. 45. Natural order, Amaryllidaceæ.

CAMELLIA JAPONICA, Low's *Jubilee*, of gardens.—A variety rivalling *C. reticulata* in the size and showiness of its blossoms, and excelling it in the form, arrangement, and number of the petals. They are of a fine, delicate, blush pink, with a streak of deeper hue down the centre. It was raised and flowered at Mr. Low's nursery, at Clapton. Natural order, Ternstrœmiaceæ.

CAMELLIA JAPONICA, Low's *centifolia*, of gardens.—Another variety, also flowered at Mr. Low's. It has remarkably broad leaves, with very prominent venations; the flowers are of a rosy crimson, not unlike those of the cabbage-rose, which has given rise to the allusion in the name.

CAMPANULA SYLVATICA, Wallich. (The wood Bell-flower).—A small annual erect plant, with a good deal the appearance of the common hare-bell, with small oblong, obovate root leaves, and narrow linear stem leaves. The flowers are erect and terminal, on long peduncles; they are broadly bell-shaped, and of a brilliant light cœrulean blue. It is found in moist and shaded places in Nepal. It is an excellent plant for the parterre: young plants reared from seeds (which are freely produced) in the autumn, and kept through the winter in the green-house, come into flower early in the summer, and continue for a long time to bloom. Not new. Figured in *Paxton's Magazine*, p. 245. Natural order, Campanulaceæ.

CARAGANA TRIFLORA, Lindley. (The three-flowered *Caragana*).—A hardy shrub (from India and Tartary?) with spiny footstalks to its four and five barbed leaves, the segments of which are oval and silky, as in most others of this pretty tribe of butterfly-flowered shrubs. The flowers are greenish yellow, growing in threes. Natural order, Leguminosæ.

CERADIA FURCATA, Lindley. (The Ichaboe Coral-bush).—A curious, succulent, forked-stemmed, green-house plant, with a few succulent spatulate leaves, and solitary small pale yellow composite flowers, of the most inconspicuous appearance imaginable. Sometimes its leathery branches are blotched with broad patches of a scarlet lichen, called *Dufourea flammea*, whence, and from its forked habit, it has been called Coral-bush. It is from Ichaboe, and the west coast of Africa, and by its appearance indicates a very sterile climate. Natural order, Compositæ.

CHÆNOSTOMA POLYANTHA, of gardens. (The many-flowered *Chænostoma*).—An interesting, soft-wooded, dwarf, bushy, green-house plant, with a dwarf habit, and numerous loose racemes of small pinkish lilac flowers, with an orange throat. It is pretty, and appears adapted for bedding out in sheltered places. It has been introduced from the parts of South Africa, about Algoa Bay, and the Zwartkops river. It is increased freely both by cuttings and seeds, and will grow in any good garden soil. Natural order, Scrophulariaceæ.

CHIRITA ZEYLANICA, *Hooker*. (The Ceylon *Chirita*).—Of this genus but two or three species are introduced; including a handsome one from China, sent by the collector of the Horticultural Society. This is a branching plant, with opposite ovate leaves, from the axils of which spring the panicles of flowers; these are branched, and bear several large deep-purple foxglove-like blossoms, which, together with the habit of the plant, are rather pretty. It is a stove plant, flowering through most of the summer months, and was introduced from Ceylon. It is adapted to associate well with the *Gloxinias*, *Gesneras*, and similar plants. Figured in the *Botanical Magazine*, t. 4182. Natural order, Gesneraceæ.

CHIRONIA FLORIBUNDA, *Paxton*. (The abundant-flowered *Chiron*).—A very pretty little evergreen sub-shrubby green-house plant, of a graceful and diffuse habit, with linear or oblong ovate leaves, and numerous large showy rose pink blossoms. It is a low-growing branching plant, which, with a little attention to stopping back the young shoots in the earlier stages of growth, will form a very beautiful specimen. It is, probably, from the Cape of Good Hope, but nothing seems certainly known respecting it. Messrs. Jackson and Messrs. Rollison both obtained it from the continent; the latter under the name of *C. Fischerii*. Figured in *Paxton's Magazine*, p. 123. Natural order, Gentianaceæ.

CLERODENDRON SPLENDENS, alba, of gardens.—Under this name, a plant is cultivated at Messrs. Henderson's, which is a very beautiful stove climber, but probably may be a species distinct from *C. splendens*. It grows much more rapidly than *C. splendens*, and flowers freely. The leaves are oval, and the bluish-white sweet-scented flowers are very numerous borne on the branching panicles. It blooms in September and October, continuing a long time in succession. It is said to be one of Mr. Whitfield's discoveries in Sierra Leone. Natural order, Verbenaceæ.

CORRÆA RUBESCENS, of gardens.—This was raised between *C. speciosa*, and *C. Lindleyana*. It is a vigorous grower, with an upright habit, and shining foliage; the flowers are drooping, tubular, very long, and of a lively red or crimson.

Raised by Mr. Gaines. This, and the next four, are figured in *Paxton's Magazine*, p. 77. Natural order, Rutaceæ.

CORRÆA PICTA, of gardens.—A hybrid raised between *C. speciosa*, and *C. virens*; it is of a strong habit, and large bold foliage. The flowers are crimson, deeply-tipped with dark green, drooping, and of a long tubular shape. Raised by Mr. Gaines.

CORRÆA PALLIDA, of gardens.—A hybrid raised between *C. rufa* and *C. alba*; it has a very bushy habit of growth, and flowers very abundantly; the flowers are long, tubular drooping, and of a pale watery green colour. Raised by Mr. Gaines.

CORRÆA DELICATA, of gardens.—A distinct and handsome hybrid between *C. alba* and *C. rosea*; the blossoms stand nearly erect, they are short in the tube, and very much expanded at the extremity, the segments being much reflexed; it is of a delicate pale rose, or deep pink, and a very desirable plant. Raised by Mr. Gaines.

CORRÆA FERRUGINEA, of gardens.—This is a hybrid between *C. alba* and *C. Grevillii*; it is a robust grower, and a free blooming plant; the flowers are large, drooping, and of good substance, the tube rather short, and the limb somewhat expanded, but not so much as in *delicata*; the colour is greenish, with a brown tinge. Raised by Mr. Gaines.

CROCUS MEDIUS, Balbi. (The intermediate-flowered *Crocus*).—A strong-growing autumnal kind, with handsome large, purple-blue flowers, which are very showy. It grows in the mountain meadows near Varese, in Lignria, and some parts of the Riviera of Genoa. Natural order, Iridaceæ.

CROCUS CLUSIANUS, Gay. (*Clusius, Crocus*). A pretty autumnal species, with rather small dark bluish-lilac flowers. It is found plentifully in Cintra, in Portugal. It flowers early in the autumn.

CROCUS SUTERIANUS, Herbert. (*Suter's Crocus*).—This is a vernal species, with rather small deep-yellow flowers; it was obtained from Angora, in Anatolia.

CROCUS DAMASCENUS, Herbert. (The *Damascus Crocus*).—An autumn flowering species, with small bluish-lilac flowers. It flowers in September; and is found in the neighbourhood of Damascus.

CROCUS TOURNEFORTIANUS, Gay. (*Tournefort's Crocus*).—A dwarf plant with pale bluish-lilac flowers, and milk-white anthers. It flowers in the autumn.

CROCUS CAMBESSEDIANUS, Gay. (*Cambessedes's Crocus*).—This has very small white flowers, streaked with purple. It flowers in the autumn; and is from Majorca.

CROCUS CARTWRIGHTIANUS, Herbert. (*Cartwright's Crocus*).—A dwarf plant, with large

purple-blue flowers, produced in the autumn. A variety of this, called *creticus*, has smaller flowers, with a tinge of straw-colour on the outside of the flower; another variety called *leucadius*, has white flowers.

CRYPTADENIA UNIFLORA, *Meisner*. (The one-flowered *Cryptadenia*).—A small twiggy heath-like green-house bush, with linear acute leaves, and pretty hypocateriform pink flowers. It is a native of the Cape of Good Hope, and flowers in the early summer months. Figured in the *Botanical Magazine*, t. 4143. Natural order, Thymelææ.

DISEMMA AURANTIA, *Labillardière*. (The orange-coloured, or New Caledonia *Disemma*).—A green-house twining shrub, very nearly allied to *Passiflora*. The leaves are three lobed; the flowers large, handsome; the five outer segments, or sepals, an inch and a half long, the inner circle of segments about half as long; the flowers are at first white, gradually assuming a yellow, or tawny tint, and finally becoming a brick red. It flowers in the middle of the summer. Figured in the *Botanical Magazine*, t. 4140. Natural order, *Passifloraceæ*.

DISOCACTUS BIFORMIS, *Lindley*. (The two-shaped Torch Thistle).—A graceful cactus-like plant, with handsome deep pink flowers, succeeded by beautiful little red berries. It is from Honduras. Figured in the *Botanical Register*, 1845, t. 9. Natural order, *Cactaceæ*.

DYSOPHYLLA STELLATA, *Bentham*. (The starry *Dysophyll*).—A lovely, delicate, small herbaceous plant, requiring to be grown in a moist stove. It has whorls of narrow leaves, and upright dense spikes of purple-lilac flowers. It is believed to be a biennial, or perhaps an annual; and is difficult of culture. Introduced from Malabar and Mysore. Figured in the *Botanical Register*, 1845, t. 23. Natural order, *Labiataæ*.

ECHEVERIA SCHEERII, *Lindley*. (Mr. Scheer's *Echeveria*).—A handsome succulent plant, with acutely ovate fleshy leaves, and a stem bearing forked panicles of handsome crimson-red, pitcher-shaped flowers, in drooping racemes. It is a native of Mexico, and produces its flowers in the winter months. In cultivation a very small supply only of water is required, or the roots will be liable to be destroyed. It requires a green-house. Figured in the *Botanical Register*, 1845, t. 27. Natural order, *Crassulacææ*.

ECHINOCACTUS LEEANUS, *Hooker*. (Mr. Lee's Hedgehog Cactus).—This is a pretty small species, raised from Buenos Ayrean seed, by the Messrs. Lee, of Hammersmith. It is of a depressed globular form, consisting of irregular tubercles, tipped with about eleven slender spines; the flowers are whitish, tinged with green; and it is a good deal in the way of *E. multiflorus*, but smaller in all its parts.

Figured in the *Botanical Magazine*, t. 4184. Natural order, *Cactaceæ*.

ECHINOCACTUS MULTIFLORUS, *Hooker*. (The many-flowered Hedgehog Cactus).—A handsome individual of this singular genus. It forms a globose mass, four or five inches in diameter (probably larger); the surface is divided into large irregular tubercles; the spines are five in a bunch, curving towards the plant. The flowers appear to be very freely produced; they are short and thick, of large size, whitish, tinged with pink and green. Its native country is not known. Sir W. Hooker observes, "it does not appear to be described, but on this subject it behoves us to speak with caution, as no plants are so difficult to define by words as the members of this now extensive family." Figured in the *Botanical Magazine*, t. 4181.

ECHINOCACTUS MYRIOSTIGMA, *Salm-Dyck*. (The many-spotted Hedgehog Cactus).—This is a very singular species. It is of a sub-orbicular, rather oblong, form, attaining a foot or more in height; exteriorly consisting of five or six deep furrows, and as many broad projecting ridges, entirely without spines. The surface is covered with white scale-like dots, which, when carefully examined, are seen to consist of matted or interwoven hairs; the flowers are small, of a pale straw colour, and appear at the top of the plant. It has been also called *Astrophyton myriostigma*. Plants have been introduced to this country from San Luis Potosi, in Mexico. Figured in the *Botanical Magazine*, t. 4177.

ECHINOCACTUS PECTINIFERUS, *Lemaire*. (The comb-spined Hedgehog Cactus).—A singular small showy species, of sub-rotund form, with many deep ribs and angles; the principal spines are in each cluster spread out horizontally in two rows, closely placed in a pectinated manner. The flowers are large and rose-coloured. It flowered at Kew in April; and was received from San Luis, Mexico. Figured in the *Botanical Magazine*, t. 4190.

EPIPHILLUM RUCKERII, *of gardens*.—Under this name a variety of *E. truncatum*, with beautiful violet-tinted flowers, is now known. It is not new, but has not till lately attracted general notice.

ERICA HALFORDIANA, *Rollison*. (Halford's Heath).—This is a hybrid, with the character of *E. ampullacea*. The flowers are whitish, with a pink tinge at the base of the tube, and greenish towards the tips; the leaves are in the way of *E. retorta*. It is a very pretty variety, blooming in July. Natural order, *Ericaceæ*.

ERICA VENTRICOSA, *vars.* (the ventricose Heath).—Of this species many varieties are now well known and admired. Several more very pretty new varieties have been exhibited during 1845, by Mr. Pamplin; these are

named *splendens*, *magnifica*, *grandiflora*, *delicata*, *elegans*, *conspicua*, *multiflora*, and *bicolor*; they are of various shades of blush and pink, and differ both as to size and form; but they are all very pretty.

EREMOSTACHIYS LACINIATA, *Bunge*. (The jag-leaved Desert-rod).—A large growing herbaceous perennial, nearly hardy, affected more by wet than cold. It grows from four to six feet high, with large pinnated leaves, and whorls of whitish labiate flowers, with a yellow lip. It is found on the eastern side of Caucasus, on dry hills. It flowers in May and June. The safest way of preserving it in winter is in pots, in a cold dry frame. Not new. Figured in the *Botanical Register*, 1845, t. 52. Natural order, Labiata.

EUSTOMA EXALTATUM, *Grisebach*. (The tall Eustoma).—This is a green-house perennial, requiring to be raised one season, to flower freely the next. The leaves are elliptic-oblong and glaucous; the flowers bell-shaped, with five oval spreading segments, rosy lilac, with a darker colour round the eye. It is a native of various parts of North America. Figured in the *Botanical Register*, 1845, t. 13. Natural order, Gentianaceae.

EVOLVULUS PURPUREO-CÆRUEUS, *Hooker*. (the purple-blue flowered Evolvulus).—A twiggy, suffruticose stove plant, with erect branches, and small wiry, rigid, spreading branchlets; the leaves are small, acutely lanceolate, and spreading. The flowers terminal on the leafy branches; they are rotate, or wheel-shaped, of a rich ultra-marine blue, with a white centre, and fine purple diverging rays; they resemble a good deal the bloom of the blue pimpinels and flaxes. It was found by Mr. Purdie in Jamaica, on arid rocks, near the sea. A variety has been flowered at Kew, with much paler blue flowers. It requires a stove; and flowers in July and August. A fine plant has bloomed at Syon. Figured in the *Botanical Magazine*, t. 4202. Natural order, Convolvulaceae.

FEDIA GRACILIFLORA, *of gardens*. (The slender-flowered Fedia).—This is a very pretty half-hardy annual, with a branching stem, moderate sized obtuse opposite leaves, and numerous close bunches of small tubular rose-coloured flowers. It is exceedingly well adapted for planting in beds to bloom during the summer; and flowers for a long time in succession. Introduced to France from Algiers; and thence obtained in this country. Natural order, Valerianaceae.

FRANCISCEA ACUMINATA, *Pohl*. (The acuminate Franciscea).—This handsome Brazilian shrub "is assuredly," says Sir W. Hooker, "the *F. acuminata* of Pohl," in the *Plant. Braz.* It is a stove shrub, with ovate leaves, and roundish purple-blue flowers, produced in

June and July. The genus is not thought by some to be sufficiently distinct from *Brunfelsia*; and Mr. Bentham has united the two genera in the descriptions of the natural order Scrophulariaceae, for the forthcoming volume of De Candolle's *Prodromus*. Figured in the *Botanical Magazine*, t. 4189. Natural order, Scrophulariaceae.

FUCHSIA SERRATIFOLIA, *Ruiz and Paron*. (The serrated-leaved Fuchsia).—This is a large-growing species, forming a small tree in Peru, and in cultivation ranking with *F. fulgens*, and *F. corymbiflora*. It has large oval pointed leaves, and long tube-shaped pink flowers, with a vermilion corolla, and sepals tipped with green. They are very showy; and are handsomely figured in the *Botanical Magazine*, t. 4174; *Botanical Register*, 1845, t. 41; and *Paxton's Magazine*, p. 169.

GALANTHUS REFLEXUS, *Herbert*. (The reflexed-flowered Snowdrop).—This is a curious little plant, from Mount Gargarus, about half size of the common Snowdrop. Natural order, Amaryllidaceae.

GARDENIA STANLEYANA, *Hooker*. (Lord Derby's Gardenia).—The flowers of this species of *Gardenia* are very handsome; they consist of a narrow tube, nine inches long, and a broad spreading limb, five inches across, of five ovate segments, white at the margin, and spotted and chequered with crimson and green in the centre of each division. It blossoms in June. The leaves are oval elliptic; and the flowers are very fragrant. It is from Sierra Leone. Figured in the *Botanical Register*, 1845, t. 47; and the *Botanical Magazine*, t. 4185. Natural order, Cinchonaceae.

GARDENIA WHITFIELDII, *Lindley*. (Mr. Whitfield's Gardenia).—This species was introduced some years since by Mr. Whitfield, from Sierra Leone, and was at the time unnamed, and probably now lurks among some of the unknown stove plants that have never bloomed. It has obovate leaves, and leathery flowers, covered with a close fur, about five inches long, with an expansion of three inches.

GAYLUSSACCIA PSEUDO-VACCINIUM, *Chamisso, &c.* (The bilberry-like Gaylussaccia).—This plant is also *Andromeda coccinea*, and *Vaccinium brasiliense*. It is a small and hardy greenhouse shrub, growing, according to Auguste de St. Hilaire, from one to two and a half feet in height. The leaves are oval or elliptic, almost without footstalks, and slightly hairy. The flowers are pitcher-shaped, that is, short tubular contracted at the extremity, and again spreading out; and divided into five little pointed segments, resembling the bloom of many of the heaths; they are of a pretty rosy pink colour, and are produced in dense racemes (lengthened branches) from buds situated near the extremity of the preceding years growth,

some of the neighbouring buds producing the leafy shoots, which bear flowers the succeeding season. The base of every flower is furnished with a bract (small leaf) considerably developed; and the flowers on each raceme all hang drooping one way, which is termed *secund*. The plant inhabits the sandy open plains, in Brazil, and the coast from the city of Caravellos, in the province of Porto Seguro, as far as the Island of St. Catharine. It requires treatment similar to that given to Cape Heath. Messrs. Loddiges exhibited it in bloom during the summer months of 1844. Figured in the *Botanical Register*, 1844, t. 62; and *Paxton's Magazine*, p. 101. Natural order, Ericaceæ.

GENISTA SPACHIANA, *Webb*. (M. Spach's Genista).—This is one of the small group of Canarian Genistas, which are such general favourites in the green-house in the spring months. It is a small bushy-growing evergreen shrub, with trifoliate leaves, the segments of which are elliptic-lance-shaped; the flowers are yellow, butterfly-shaped, and sweet-scented, in loose spikes, at the end of the branches. It is indigenous to the high mountains of Teneriffe, and had existed for several years in the open ground at Paris, until destroyed by the cold of the late severe winter. Figured in the *Botanical Magazine*, t. 4195. Natural order, Leguminosæ.

GESNERA MACULATA, *of gardens* (the spotted-flowered Gesnera).—This is a hybrid production, of considerable beauty, apparently raised between the *G. Douglassi*, and some one of the large scarlet-flowered Brazilian species, which adorn our stoves. At first sight, the blossoms of this plant greatly resemble the *Penstemon gentianoides*, being about the same size, of a somewhat similar shape, and nearly of the same dull rose-crimson tint; a colour, however, very distinct and pretty. The leaves are large, cordate, and hairy, on stalks of some length; the flowers numerous borne for some distance at the top of the stem; they are tubular, the tube slightly curved upwards, and the lower part projecting forwards, giving the extremity of the flower the appearance of a scoop. It flowers in March and April. Natural order, Gesneraceæ.

GESNERA SCHIEDIANA, *Hooker*. (Schiede's Gesnera).—A very handsome sub-shrubby stove plant, with an erect hairy stem, and thick, oblong lanceolate leaves, soft and downy, and arranged in whorls of three. The flowers are numerous from the axils, between bell-shaped and funnel-shaped, of a rich scarlet colour, and clothed with long, shaggy, scarlet hairs; it is divided at the end into five lobes, which are yellow, marked with broken crimson lines. It is from Mexico, and flowered in November at Woburn. It has

been regarded as a variety of *G. spicata*. Figured in the *Botanical Magazine*, t. 4152.

GESNERA GERARDIANA, *Newman*. (Gerard's Gesnera).—This is a very handsome kind, much like *G. zebrina*, but without the Zebra-like markings on the leaves. The flowers are half red, and half yellow, and spotted as in *G. zebrina*, and often fifteen or twenty together in a panicle. It is much like an Achimenes.

GESNERA VESTITA, *Bentham*. (The clothed Gesnera).—A sub-shrubby stove plant, with hairy ovate-oblong stalked leaves, and orange-coloured flowers, mottled on the lobes of the corolla. Collected by Mr. Hartweg, near the village of Tena, in the province of Bogota. It is not a very showy species.

GLADIOLUS FESTIVUS, *Herbert*. (The gay Gladiolus, or Corn-flag).—The flower stem of this species rises to about a foot and a half high, bearing about ten flowers, thickly set towards its summit, and leaning to one side (*secund*). The flowers have a white cylindrical tube, and a pale rose-coloured limb; and the leaves, which rise after the flowers, are smooth, narrow, and acute. It is from the Cape of Good Hope, and has flowered in the Royal Botanic Garden, Kew. Natural order, Iridaceæ.

GLOXINIA TUBIFLORA, *Hooker*. (Tube-flowered Gloxinia).—A stove plant, of upright rather straggling habit, and bearing large white agreeably fragrant flowers, consisting of a long narrow tube, dilated at the mouth, and spread out into five broad unequal segments. It flowers throughout the summer months, under the same treatment as Gesneras, Achimenes, &c. It is said to have been raised from seeds received from Buenos Ayres, but is believed to be a native of South Brazil, or Paraguay. Figured in the *Botanical Register*, 1845, t. 3. Natural order, Gesneraceæ.

GOMPHOLOBIUM VERSICOLOR, *var. caulibus purpureis*, *Hooker*. (The purple-stemmed variety of the changeable Gompholobium).—This is a handsome green-house shrub, of vigorous habit, with long trailing stems, narrow lower leaves, and crimson pea-like flowers, of much the same appearance as those of *G. polymorphum*. It was exhibited in May 1845, by Messrs. Lucombe and Co., and has been figured in the *Botanical Magazine*, t. 4179; and *Paxton's Magazine*, p. 219. Natural order, Leguminosæ.

GOODENIA GRANDIFLORA, *Sims*. (The ovate-leaved Goodenia). Not a new plant, but one which has become exceedingly rare, if not altogether lost, till Mr. Bidwell presented seeds to the Horticultural Society from New Zealand? It is a green-house perennial, with the lower leaves lyrate, and the upper ones ovate; the flowers are yellow, orange scented, composed of five nearly oval petals, with crimped margins, and situated two above, and three beneath. It should be raised from

cuttings one season, and kept over the winter, and then grown into large flowering plants the following summer. Figured in the *Botanical Register*, 1845, t. 29. Natural order, Goodeniaceæ.

HABRANTHUS CONCOLOR, *Lindley*. (The whole-coloured Habranth).—A green-house or frame bulb, of small size, producing rather pretty daffodil-like pale greenish-yellow flowers, in the months of April and May. It was found by Mr. Hartweg, in pastures near the city of Leon, in Mexico, and sent to the Horticultural Society. It grows in a mixture of sandy loam, peat, and well-reduced cow dung. Figured in the *Botanical Register*, 1845, t. 54. Natural order, Amaryllidaceæ.

HABRANTHUS NOBILIS, *Herbert*. (The noble Habranthus).—A showy bulbous plant, perhaps a variety of *H. hermesinus*. It has rather fleshy blunt leaves, a quarter of an inch wide; and a flower stem about a foot high, usually bearing about six flowers. The tube of the flowers is very short, and greenish; the limb, about two inches long, is of a full deep red, ribbed, near the base, and there whitish in the interior. It flowered out of doors in October, in front of a pine stove, in the garden of the Rev. F. Belfield, at Primley Hill, near Torquay.

HEBECLADUS BIFLORUS, *Miers*. (The twin-flowered Hebecladus).—This is a suffrutescent—scarcely shrubby plant, with green fleshy branches, subovate leaves, and handsome drooping flowers in pairs, rarely three together. The leaves are alternate, on the lower part of the stem, but the upper ones are in unequal pairs; the flowers issue from the axils; they consist of cylindrical hairy tubes, of a dull purple colour, and a limb of five narrow green spreading segments. It is a native of the Andes of Peru, about Tarma, Canta, Cullnay, &c. It is a green-house plant, increased by cuttings; it flowers in August, and should be potted in a light loamy soil. Called also *Atropa biflora*. Figured in the *Botanical Magazine*, t. 4192. Natural order, Solanaceæ.

HELIOTROPIUM INCANUM, *of gardens*. (Hoary-leaved Heliotrope).—A half-shrubby plant, like the well-known common Heliotrope. It has the leaves very rugose, or wrinkled; and the flowers are white, and possess an odour similar to the common kind, but fainter and less pleasant: indeed the plant is altogether inferior to *H. peruvianum*. It was found on dry hills in Peru, by Messrs. Veitch's collector, by whom the plant has been raised. Natural order, Boraginæ.

HINDSIA LONGIFLORA, *alba, of gardens*. (The white long-flowered Hindsia).—This is a very pretty and interesting variety of the long-flowered Hindsia, differing only in having pure

white flowers instead of blue ones; they are sweet scented. It is grown by Messrs. Henderson. Natural order, Rubiaceæ.

HYPOCYRTA DISCOLOR, *Lindley*. (Discoloured Hypocyrtia).—A tall stove herbaceous plant. It has large smooth, oval-stalked leaves, and the flowers are produced singly at the axils; the calyx is large, spreading, and purplish, and the corolla dull yellow and shaggy with hair. It is cultivated under the name of *Columnnea Zebrina*. Natural order, Gesneraceæ.

INDIOGERA DECORA, of gardens. (The comely Indigo-flower).—A handsome green-house shrub, from China. It has rather large pinnated foliage, and short thick spikes of pretty pink, pea-shaped flowers, which are in a measure hidden by the foliage. It has bloomed in September. Natural order, Leguminosæ.

IOCHROMA TUBULOSA, *Bentham*. (The tubular Iochroma).—This was called *Habrothamnus cyaneus*. In the opinion of Mr. Bentham, however, this, with one or two other plants, are better separated as a distinct genus, differing from *Habrothamnus* in the aestivation of the corolla, and in the fruit, which is pulpy, a sort of berry, and not a dry capsule. The flowers are deep purple, very numerous from the tops of the stems, sometimes as many as thirty in a cluster. Figured in the *Botanical Register*, 1845, t. 20. Natural order, Solanaceæ.

IRIS IMBRICATA, *Lindley*. (The imbricated Iris).—A showy hardy perennial, with pale lemon-coloured flowers, of considerable size. It is allied to *I. squalens*, of which it may possibly be only a variety. The plant is cultivated by the Dean of Manchester, and is found to be quite hardy when planted in light sandy loam, and in a warm situation. It flowers in May. Figured in the *Botanical Register*, 1845, t. 35. Natural order, Iridaceæ.

IRIS STYLOSA, *Desfontaines*. (The long-styled Iris).—The Dean of Manchester has brought this plant from Mount Rondi, in Cephalonia. It is a small species, with narrow leaves growing in a spreading flat tuft; and has large blue flowers, supported by a tube six inches long, from the underground root (or stem), in the same way as the *Crocus*. Some of the steeps of Corfu are said to be quite covered with its blossoms during January and February. Its hardiness in our climate has not been ascertained. Natural order, Iridaceæ.

IXIOLIRION MONTANUM, *Herbert*. (The mountain Ixia-lily).—This is a handsome hardy bulb, belonging to the caulescent division of Amaryllidaceous plants. It has the long narrow leaves peculiar to this tribe of plants, and produces a branching, somewhat spiked, flower stem, well furnished with showy bluish

lilac-flowers; these flowers are composed individually of a short tube, and six long narrow, equal, spreading, and reflexed, coloured segments; the stamens project a short distance beyond the tube. The stem is furnished with a bract-like leaf, where the branches of the flower spike are produced. The bulbs resemble large nuts, with a dark chocolate coloured smooth covering. The leaves, which are produced in autumn, remain uninjured during the winter, and are succeeded in the spring by the flower stem—the flowers being in perfection during May and June, and the seed ripened by July. It is a native of the hills in the neighbourhood of Teheran. Figured in the *Botanical Register*, 1844, t. 66. Natural order, Amaryllidaceæ.

IXORA ODORATA, *Hooker*. (The fragrant *Ixora*).—A handsome stove shrub, with large broadly ovate leaves, and bearing numerous panicles of whitish hypocrateriform fragrant flowers in July and August. It was imported from the continent by Messrs. Lucombe and Co., of Exeter, under the incorrect name of *I. Brunonis*. It is ascertained to be a native of Madagascar. Figured in the *Botanical Magazine*, t. 4191. Natural order, Rubiaceæ.

JASMINUM AFFINE, *Rojle*. (The kindred *Jasmine*).—This is thought to be the common officinal *Jasmine*, varying slightly, with pink-tubed flowers, rather larger than usual. It is a wild plant from the North of India, raised from seeds in the garden of the Horticultural Society. The native country of the common *Jasmine* is said to be the foot of Caucasus, whence it is supposed to have spread eastward; but the latter point is conjectural, unless this plant should establish its truth. It is, at any rate, quite hardy. Figured in the *Botanical Register*, 1844, t. 26. Natural order, *Jasminaceæ*.

LABISIA POTHIOINA, *Lindley*. (The pothos-like Spoon-flower).—A curious stove-plant, with a stem rooting at the base, oval pointed leaves, and spikes of small white flowers. It was introduced from Penang, and supposed to be a *Pothos* till it bloomed, when it was found to have no affinity with that genus, but to belong to a totally different section of the vegetable kingdom. It requires a humid atmosphere, and seems naturally to occupy very damp, shady situations. Figured in the *Botanical Register*, 1845, t. 48. Natural order, *Myrsinaceæ*.

LANKESTERIA PARVIFLORA, *Lindley*. (The small-flowered *Lankesteria*).—A curious evergreen stove plant, from Sierra Leone, whence it was brought by Mr. Whitfield, and has since been flowered by Mr. Glendinning, of the Chiswick nursery. The leaves are obovate, the flowers are in short axillary spikes, tube-shaped, slender, with the border

all on one side; they are yellow, changing to white. Natural order, *Acanthaceæ*.

LAPLACEA SEMISERRATA, *St. Hilaire*. (The half-serrated-leaved *Laplacea*).—This is a neat branching stove shrub; the leaves are oblong, and the flowers look something like a small single white *Camellia*. The foliage is good, and from the flowers being produced plentifully, and on small plants, it is likely to be a useful and ornamental stove plant. Natural order, *Ternströmiaceæ*.

LILIUM ATROSANGUINEUM, *vars.*—Mr. Groom, of Clapham, has a great many of these, which have been fertilized by *L. bulbiferum*. The plants are of a peculiarly dwarf character, growing from six inches to a foot high, and producing clusters of large fiery-coloured blossom, flecked with dark blotches. They are extremely handsome. Natural order, *Liliaceæ*.

LILIUM THOMSONIANUM, *Lindley*. (Dr. Thomson's *Lily*).—A half-hardy, or perhaps hardy species, native of Mussoree, one of the northern provinces of British India. It is of upright habit, with long narrow leaves, and bell-shaped, pale rose-coloured flowers, which are sweet scented. In the green-house of Messrs. Loddiges it produced its flowers in April. The treatment usually given to *Tigridias*, would probably suit it. Figured in the *Botanical Register*, 1845, t. 1.

LOBELIA THAPSODEA, *Schott*. (The mullein-like *Lobelia*).—The family of *Lobelia* is a very extensive one, and contains not only plants of great diversity of character, but also of great beauty; the present is a stove plant, but one of the handsomest; its character is so stately and majestic as to have induced De Candolle to speak of it as "*Lobeliarum princeps*." It is an upright-growing perennial herbaceous plant, from six to eight feet high, with a simple (unbranched) leafy stem, and a habit and foliage resembling that of the great Mullein (*Verbascum Thapsus*), from whence the specific name has been derived; the leaves are broadly lanceolate, the lower ones often a foot and a half long; and the flowers (which are rose-purple, and hairy or silky) are produced in a long dense raceme, so closely aggregated as to assume a spike-like form above the leaves. It has been found both about Rio, on the Organ Mountains, and at Goyaz, in Brazil; and has been flowered by Mr. Mackay, at the College Botanic Garden, in Dublin; it is also in the collections at the Kew and Glasgow Botanic Gardens. Figured in the *Botanical Magazine*, t. 4150. Natural order, *Lobeliaceæ*.

LOBELIA DISCOLOR.—Under this name, at Mr. Groom's nursery, is a small-growing plant, with leaves beautifully variegated with

white and chocolate colour. We have not seen the flowers.

LUCULIA PINCIANA, *Hooker*. (Mr. Pince's *Luculia*).—A very handsome green-house shrub, from Nepal, with large ovate leaves, and immense heads of pinkish fragrant flowers, varying in colour as they become older. It has been raised by Messrs. Lucombe & Co., of the Exeter nursery. Figured in the *Botanical Magazine*, t. 4132. Natural order, Cinchonaceæ.

LUPINUS RAMOSISSIMUS, *Bentham*. (The branching Lupin).—This is a pretty half-hardy shrubby species of Lupin, growing from three to four feet high; it appears adapted for culture as an annual, if sown early and kept in pots until danger from frost is past, before being planted out. The stem and leaves are hairy; the flowers open blue, with a dash of yellowish white on the upper part; this turns to a purplish red after being some time expanded, and is then of a similar colour to the dark-flowered sweet peas; it resembles these flowers also in its smell. Mr. Hartweg found it at Chimborazo, at an elevation of 13,000 ft. above the level of the sea. It blooms from June till October. Figured in the *Botanical Register*, 1845, t. 25. Natural order, Leguminosæ.

LYCIUM FUCHSIODES, *Humboldt*. (The Fuchsia-like Lycium).—An evergreen green-house, or half-hardy plant, with handsome oval leaves, and drooping, tubular, orange-scarlet flowers. Native of the Andes of South America. Figured in the *Botanical Magazine*, t. 4149. Natural order, Solanaceæ.

LYPERIA PINNATIFIDA, *Bentham*. (The pinnatifid *Lyperia*).—This is the old *Manulea pinnatifida*. It is a straggling, growing almost trailing, sub-shrubby green-house plant, forming a neat bush, with small pinnatifid leaves, and large purple flowers, of five irregular petals, nearly square at the ends. It is from the Karroo desert of Southern Africa. It is said to have been many years in this country, but does not appear to be much known. Natural order, Scrophulariaceæ.

MUSSÆNDA MACROPHYLLA, *Wallich*. (The broad-leaved *Mussænda*).—The *Mussændas* are singular shrubby plants, bearing corymbs of funnel-shaped flowers, each head of flowers having usually three or four of the calyx-lobes expanded into a large leaf, differing from the ordinary leaves of the plant only in colour, these being usually nearly white; the other calyx-lobes, of which there are five to each individual flower, are small and acute. This plant forms a handsome evergreen shrub, growing three to six feet high, with ovate acuminate leaves, and large terminal corymbs of orange-coloured flowers, which are tubular, and spread out at the end into five pointed

divisions. It is from the mountains of Nepal, and requires a temperature rather warmer than that of a green-house, or to be kept in the warmest part of a good green-house. It blooms during the summer. Messrs. Knight and Perry first bloomed the plant in 1844. Figured in *Paxton's Magazine*, p. 197. Natural order, Cinchonaceæ.

MYOPORUM SERRATUM, *R. Brown*. (The saw-leaved *Myoporum*).—A small green-house bush, with lanceolate serrated leaves, and white flowers spotted with purple, composed of five round petals, something like those of the hawthorn; they are borne in great profusion. It should be potted in sandy peat earth, and requires about the same treatment as heaths. It is a native of Tasmania. Figured in the *Botanical Register*, 1845, t. 15. Natural order, Myoporaceæ.

NAGELIA DENTICULATA, *Lindley*. (The toothed *Nagelia*).—This is the *Cotoneaster denticulata* of Mr. Bentham, and is proposed to be separated from *Cotoneaster* by Dr. Lindley, from a difference in the fruit, which in *Cotoneaster* contains a hard bony stone, and in the present plant, a thin inner coat like that in a *Pyrus*. Otherwise it agrees both in the flowers, and in much of its general habit, with *Cotoneaster*. The fruit is of a pale pink colour, about as large as a pistol ball, and with a brittle semi-transparent flesh. Natural order, Rosaceæ.

NEPTUNIA, *species*.—A species of *Neptunia*, (by some considered to be *Desmanthus*) has flowered at Syon, having been raised from Jamaica seeds. It is a stove aquatic herb, with mimosa-like, sensitive leaves, and roundish oval heads of yellow flowers. The stems of an allied plant, among others, furnish the substance called rice paper, which consist of the pith cut into thin lamina, or plates, and pressed out quite flat. It has also flowered from Indian seed in the gardens of the Royal Botanic Society. It flowers in October. Natural order, Mimoseæ.

ORNITHOGALUM MARGINATUM, *Lindley*. (The white-edged Star of Bethlehem).—Rather a pretty hardy green-house bulb, flowering in March and April. The leaves are long, narrow, and pointed with a white margin; the flowers are green on the outside, white inside, of six spreading petals, on long stalks, from a short erect stem. It was procured from the Asiatic side of the Bosphorus, and might probably succeed out of doors, if kept dry in winter. It is under a foot in height. Figured in the *Botanical Register*, 1845, t. 21. Natural order, Liliaceæ.

ORNITHOGALUM NANUM, *Sibthorp*. (The dwarf Star of Bethlehem).—A pretty little dwarf-growing hardy bulb, resembling the common Star of Bethlehem. It grows freely

in sandy loam, and flowers in March. The Dean of Manchester received it from "marshy meadows, at Berbeek, near Constantinople." It is peculiar in its stiff narrow leaves, and short stalked dwarf corymbs of flowers. Figured in the *Botanical Register*, 1845, t. 39.

PASSIFLORA SCHRÖDERIANA, *of gardens*. (Mr. Schroder's Passion-flower).—This is a hybrid between *P. alata*, impregnated with *P. Loudonii*. "In general appearance the plant possesses much of the character of the former, its leaves are of the same entire form, and the flowers, besides retaining the general outline of those of the seed-bearing parent, are produced on short axillary peduncles, as are those of *P. alata*; while, on the other hand, its relation to the contra-parent is evident in the rounded stems of the plant, its more compact manner of growing, and in the vivid tints of the bracts and corolla; thus amalgamating, as it were, the distinguishing features of either plant, and fortunately possessing an advantage over both in its copious habit of flowering." Natural order, Passifloraceæ.

PELARGONIUM ANAIS, *of gardens*.—This, though a florist's flower, is rather of a more permanent character than many of them, and therefore deserves a place in this list. It is quite a fancy variety; and one which is sure to be admired by ladies. The plant is most profuse of bloom, being literally quite "smothered" with flowers, which are white, with five large, deep-coloured, bright rose-purple spots, nearly equal in size, one on each petal. It is something in the way of a variety called Queen Victoria, but that is altogether paler. Plants were exhibited and rewarded, at one of the exhibitions of the Royal Botanic Society.

PENTSTEMON GENTIANOIDES, *var. diaphanum*, *Lindley*. (The transparent gentian-like Pentstemon).—This has rather larger flowers than the old *P. gentianoides*; the under half of each bloom is almost colourless. Figured in the *Botanical Register*, 1845, t. 16. Natural order, Scrophulariaceæ.

PHÆDRANASSA CHLORACRA, *Herbert*. (The crimson and green Phædranassa).—A handsome bulbous plant, with tubular deep red and green flowers drooping in a cluster from the top of an erect stem. It requires a greenhouse. Introduced from Peru. Figured in the *Botanical Register*, 1845, t. 17. Natural order, Amaryllidaceæ.

PHÆDRANASSA OBUSA, *Lindley*. (The obtuse-tubed Phædranassa).—A bulbous plant, with long, narrow leaves; and an erect, glaucous flower-stem (scape), bearing about six flowers in an umbel at the top. The flowers are cylindrical, flesh-coloured tubes, each abruptly terminating at the base in six prominent ribs, and spreading out at the apex, where

they are tipped with green. It is much like *P. chloracra*, differing in some minor botanical points. It was introduced from Peru, by Mr. Hartweg, to the garden of the Horticultural Society.

PHILIBERTIA, *species*.—A species of Philibertia, from Peru, was exhibited in October, by Messrs. Veitch. It is a green-house climbing plant, of free growth, bearing cordate acuminate leaves, and greenish brown, drooping, saucer-shaped flowers, which are said to be fragrant. It is not at all striking in its appearance. Natural order, Asclepiadaceæ.

PHLOX DRUMMONDII, *alba*.—A pure white variety of the *Phlox Drummondii*; it is a good plant for bedding out to produce masses of white flowers; is suitable for sheltered flower gardens.

PHYLLARTHON BOJERIANUM, *DeCandolle*. (Bojer's Phyllarthron).—A remarkable small stove shrub, from Madagascar, and some neighbouring islands. It has no leaves, but broad, thick, leaf-like petioles, which are articulated, the lower part cuneate, the upper elliptic. The flowers are funnel-shaped, rose-coloured, produced in axillary panicles bearing two or three flowers each; not very numerous produced. It has flowered in August. Figured in the *Botanical Magazine*, t. 4173. Natural order, Bigoniaceæ.

PITCAIRNEA RINGENS, *Link*, *Klotzsch*, and *Otto*. (The gaping Pitcairnia).—A stove herbaceous plant with long narrow leaves, something in the way of the pine-apple, and upright spikes of fine long crimson flowers. It is a stove plant of great beauty; probably from Demerara. Natural order, Bromeliaceæ.

PLANTIA FLAVA, *Herbert*. (The yellow Plantia). A pretty little bulbous plant, allied to Sisyrinchium and Homeria, introduced from the Cape of Good Hope. The leaves, which are produced singly, are narrow and elongated. The flowers are six-cleft, about four in a cluster. They are small, pale yellow, and star-shaped, and are produced on a short, branching, slender stem. It has been named in compliment to Mr. Plant, of Cheadle, who has originated many curious hybrids, among the members of this and the allied natural orders. Natural order, Iridaceæ.

PLEROMA KUNTHIANUM, *Paxton*. (Kunth's Pleroma). This is an evergreen stove-shrub, with large oblong acute leaves, and panicles of very large, deep, blue-purple flowers, of five wedge-shaped petals, each having a white blotch at the base. It is from the Organ Mountains of Brazil, 3,000 feet above the sea, whence it was sent to the Glasgow Botanic Garden. Also called, *Pleroma Benthamianum*, and *Lasiandra Kunthiana*. Natural order, Melastomaceæ.

POLYGALA DALMAISIANA, *of gardens*.

(Dalmats' *Polygala*). A French hybrid, between *P. grandiflora* and *P. cordifolia*, the former of which it resembles in the leaf, and the latter in the colour of the flower. It forms a handsome green-house shrub. Natural order, *Polygalaceæ*.

PORPHORYCOMA LANCEOLATA, *Hooker*. (The lance-leaved *Porphorycoma*.) A beautiful stove shrubby-plant, with lance-shaped leaves, and crested heads of beautiful purple flowers. It has the habit of the *Aphelandras*. It has been grown at the Royal Botanic Garden at Kew, but nothing is known of its history. Figured in the *Botanical Magazine*, t. 4176. Natural order, *Acanthaceæ*.

POTENTILLA BICOLOR, *Lindley*. (The two-coloured *Potentilla*). A handsome, hardy, perennial plant, with trailing stems, digitate, or strawberry-like leaves, and flowers also of the shape of those of the strawberry, but of a clear yellow colour, covered over with red lines, like net-work, melting into a clear red border. It flowers from July to September. It was raised in the garden of the Horticultural Society, from seed received from Dr. Royle, and said to have been collected either in Cashmere or Thibet. Figured in the *Botanical Register*, 1845, t. 62. Natural Order, *Rosaceæ*.

RHODODENDRUM ARBOREUM, *var. Beauty*.—A variety raised by Mr. Jackson, of Kingston. The flowers are large, of a French white ground colour, and prettily spotted in the upper part with dark coloured spots. Natural order, *Ericaceæ*.

RHODODENDRUM CAMPANULATUM, *hybridum*, *of gardens*. (The bell-flowered *Rhododendron*, variety). This is a fine variety, exhibited at the Regent's Park exhibition in April 1845, by Messrs. Lucombe, Pince, and Co. of Exeter. It has immense heads of fine, large, well-formed, flesh-coloured flowers, spotted in the upper parts with clear dark spots.

RHUS DIVERSILOBA, *Torrey*. (The various-leaved Poison-Oak). This is a hardy deciduous shrub, or small tree, of upright growth, with leaves consisting chiefly of three (sometimes five) leaflets of an ovate form, and considerably lobed. The flowers are in axillary branches, small and white, and produced abundantly in June. It is from California, and the country people call it Yearn, and say that it poisons on contact, or even through the air. It is, doubtless, very venomous, as also is the common poison oak, *Rhus Toxicodendron*, to which it is nearly related. It grows freely in common garden soil. Figured in the *Botanical Register*, 1845, t. 38. Natural order, *Anacardiaceæ*.

RHYNCHOGLOSSUM ZEYLANICUM, *Hooker*. (The Ceylon *Rhynchoglossum*). An annual

or a biennial plant from Ceylon, introduced to the Royal Botanic Garden of Kew, by Mr. Gardner. It is an erect-growing, branching plant, about a foot high, with succulent branches, alternate, obliquely ovate leaves :—(one half is frequently twice as large as the other). The flowers are drooping, in long terminal one-sided racemes; they are small, bright blue, and personate; that is, with a cylindrical tube, and a two-lipped limb,—the upper lip two-cleft, and the lower one three-cleft. The tube is pale-coloured. It requires a stove. Figured in the *Botanical Magazine*, t. 4198. Natural order, *Cyrtandraceæ*.

RIEES SANGUINEA, *flore-pleno*, *of gardens*. (The double scarlet-flowered Currant). A handsome hardy shrub, differing from the common scarlet-flowered currant, in having double flowers. The drooping racemes, of deep red blossoms, are produced freely. Figured in *Paxton's Magazine*, p. 121. Natural order, *Grossulaceæ*.

RUELLIA LILACINA, *Hooker*. (The lilac-flowered *Ruellia*). A stove-shrub, with smooth, opposite, ovate leaves, and axillary, purple-lilac flowers, generally two from each axil; they are funnel-shaped, with a long, slender, curved tube, and spreading five-lobed limb. Its blossoms are produced from time to time, during the greater part of the summer months. The native country is unknown. Figured in the *Botanical Magazine*, t. 414-1, and in *Paxton's Magazine*, p. 243. Natural order, *Acanthaceæ*.

RUELLIA MACULATA, *of gardens*. (The spotted *Ruellia*). We have not seen this plant in flower. It is a handsome-growing sub-shrubby stove-plant, with ovate leaves, which are beautifully marked with blotches resembling films of silver; these blotches occur in two rows, one on each side of the midrib, and a little distance from it, and they extend to within a short distance of the margin. Each blotch occupies, in width, the space between the side veins, which branch off in a parallel manner, from the midrib to the margin. It is grown, under the above name, by Messrs. Henderson, of Pine-apple Nursery.

SALPICHRÖA GLANDULOSA, *Miers*. (The glandular *Salpichroa*). This is a small Chilian suffruticose spreading plant, allied to *Atropa*. It has small, opposite, cordate, hairy leaves, from the axils of which are produced the long, tubular, greenish, or pale-yellow flowers. It was exhibited at Chiswick, in flower, in the month of July, by Messrs. Veitch. Natural order, *Solanaceæ*.

SALPIGLOSSIS, *species*. Messrs. Veitch have introduced from Peru a species of this interesting, though difficult, family of half-hardy biennials, which has flowers of a bright

deep yellow. It is very showy, and possesses the general character of the other species. Natural order, Scrophulariaceæ.

SALPINXANTHA COCCINEA, *Hooker*. (The scarlet Trumpet-flower.) A handsome stove-shrub, with ovate leaves, and loose spikes of crimson-scarlet, tube-shaped flowers. It is from Jamaica. Figured in the *Botanical Magazine*, t. 4158. Natural order, Acanthaceæ.

SCÆVOLA ATTENUATA, *Brown*. (The attenuated-leaved Scævola). This is a shrubby green-house plant, woody below, but herbaceous in the younger branches. It has alternate, lanceolate, somewhat rigid, hairy leaves, tapering at the base. The flowers are in short, terminal, and also in lateral spikes; they are of a bright light blue, tinged with purple, and consist of a tube, which is slit above, the whole length, and divided into five obovate, one-sided, wavy segments. It is a green-house plant, growing in good loam, and is very pretty when clothed with flowers, which are freely produced in June and July. It is a native of the south-western parts of Australia. Figured in the *Botanical Magazine*, t. 4190. Natural order, Goodeniaceæ.

SCILLA PUBENS, *Welwitsch*. (The downy Squill). A plant like *S. peruviana*, with greyish-blue flowers, but smaller than that species in all its parts. It is a hardy bulb, with the flowers in a short spike: the flowers of the squills are small, star-like. Natural order, Liliaceæ.

SCILLA BERTOLONII, *Duby*. (Bertoloni's Squill). Apparently a hardy bulb, with a raceme of pale lilac flowers, in the way of *S. italica*, but much smaller.

SELAGO DISTANS, *E. Meyer*. (The loose-flowered Selago). This is a slender, branching, soft-wooded, green-house plant, with downy branches, and narrow, semi-terete leaves, and loose spikes, of small pale-coloured flowers, which are attractive rather from the profusion in which the plants produce them, than from any striking individual beauty they possess. It is easily cultivated, growing in the green-house, in sandy peat soil, and flowers in April. The flowers are rather sweet-scented; but the foliage has an unpleasant odour. Figured in the *Botanical Register*, 1845, t. 46. Natural order, Selaginaceæ.

SIDA GRAVEOLENS, *Roxburgh*. (The heavy-scented Sida).—A handsome stove species, having some resemblance in figure to *Abutilon striatum*, but with erect instead of pendent flowers. It has large, soft, pale green, heart-shaped leaves; and yellow flowers with a deep blood-coloured eye; and grows five or six feet in height. It has been sent from Jamaica; and flowers in the autumn. Not new. Figured

in the *Botanical Magazine*, t. 4134. Natural order, Malvaceæ.

SIDA PÆONILEFLORA, *Hooker*. (The pæony-flowered Sida).—This is a tall stove shrub, or perhaps a small tree, with large, rather coarse, ovate leaves, producing at the top of the stem two or three large flowers, of a cup-shaped figure, and of a red-rose colour, with yellow anthers. It was introduced by Messrs. Veitch, of Exeter, and first flowered with them in January last. Mr. Lobb, their collector, found it on the Organ Mountains of Brazil. It belongs to the section *Abutilon*, by some regarded as a genus. Figured in the *Botanical Magazine*, t. 4170.

SIPHOCAMPYLOS COCCINEUS, *Hooker*. (The scarlet-flowered Siphocampylos). A dwarf sub-shrubby stove plant, with cordate, acuminate leaves, and long, tubular, scarlet flowers, like those of a *Salvia*—very showy. Introduced by Messrs. Veitch, of Exeter; from South America. Figured in the *Botanical Magazine*, t. 4178; and *Paxton's Magazine*, p. 173. Natural order, Lobeliaceæ.

SINNINGIA VILLOSA, *vars.*—Of this plant, crossed with *Gloxinia caulescens*, Mr. Carton, gardener to the Duke of Northumberland, at Syon, has raised several hybrids: the plants manifest a disposition to acquire a stem like the *Sinningia*; and the blossoms of some have a dull purple tinge; others resemble the pale greenish yellow of the parent. They are not handsome: they were blooming in September. Natural order, Gesneraceæ.

SMEATHMANNIA LÆVIGATA, *Solander*. (The smooth-stalked Smeathmannia).—An upright evergreen growing shrub, with spreading branches, and alternate, oblong, somewhat leathery, coarsely serrated leaves. The flowers are solitary from the axils of the leaves, consisting of two rows of five segments each, the outer row partly white, the inner row white, with numerous stamens. It requires the constant heat of the stove, and flowers freely in July. Though belonging to the natural order of Passion-flowers, it has more the general aspect of the Tea plant. Not new. Figured in the *Botanical Magazine*, t. 4194.

SOLANUM MACRANTHUM, *Dunal*. (The large-flowered Nightshade).—A stove shrub, or almost a small tree, growing twelve or fourteen feet high, with large angularly lobed leaves, densely clothed with rusty green wool, and beset on the stem, footstalks, ribs, and veins of the leaves, with rigid prickles; the flowers are in axillary racemes, near the top of the branches, composed of five ovate, spreading segments, of a pale bluish purple, with darker dashes and pale lines. It is a native of Brazil. Figured in the *Botanical Magazine*, t. 4138. Natural order, Solanaceæ.

SPHEROTELE COCCINEA, *Link, &c.*—This

is the same plant as *Stenomesson coccineum*. Natural order, Amaryllidaceæ.

SPIRÆA DOUGLASII, *Hooker*. (Mr. Douglas's Spiræa).—A beautiful hardy deciduous shrub, with elliptic, oblong leaves, and densely crowded, branched panicles of small, deep, pinkish lilac flowers. They bloom from July till October. Figured in *Paxton's Magazine*, p. 195. Natural order, Rosaceæ.

SPIRÆA LINDLEYANA, *Wallich*. (Dr. Lindley's Spiræa).—This is a very handsome hardy shrub—much resembling *Sp. sorbifolia*. Like that species, it has large pinnate leaves, with from five to eight pairs of leaflets, and a larger terminal one; and the flowers, of a light colour (pinkish lilac), are produced profusely on large branching panicles. It is a handsome plant, flowering from June till September, and is nearly, or quite hardy, having stood three winters unprotected in the Horticultural Society's garden at Chiswick; the past severe winter (1844-5) however, killed it to the ground, but it again sprung up from the root. It is a native of the Himalayas. Figured in the *Botanical Register*, 1845, t. 33.

STAPELIA CACTIFORMIS, *Hooker*. (The cactus-like Stapelia).—This curious-looking plant has been received from Little Namaqua land, and has flowered in the Kew Botanic Garden. In the present instance, the plant resembles a dwarf Mammillaria, being about six inches high, and two broad; and externally mammillate (formed like teats). The flowers are small, and nearly sessile (without stalks), produced several together at the top or crown of the plant: they are composed of five triangular segments, forming a little star; the colour is palish yellow, with numerous transverse marks, or bands, of a bright red colour. It bloomed in August 1844. Natural order, Asclepiadaceæ.

STATICE FORTUNII, *Lindley*. (Mr. Fortune's Sea-Lavender).—Among the plants sent from China by Mr. Fortune, collected for the Horticultural Society, is a yellow flowered, herbaceous, perennial Statice. It grows with a tuft of spatulate leaves, and rises about two feet, with a straggling panicle, bearing small yellow flowers, protruding from the whitish calices. Mr. Fortune describes it as growing in the sand, near the sea coast, and not growing more than a foot in height, with numerous flowers. Probably it requires to be grown less freely. It has bloomed from July till October. It is a frame plant, and probably might be grown in salt marsh soil. Figured in the *Botanical Register*, 1845, t. 63. Natural order, Plumbaginaceæ.

STATICE MACROPHYLLA, *Sprengel*. (The large-leaved Sea-Lavender).—A splendid shrubby green-house plant, with broad obovate-spatulate leaves, closely seated on the stem, and bearing a large branching panicle of rich

violet flowers, with white corollas. It grows three or four feet high, in the way of *Statice arborea*, flowering in May and June, and continuing a long time (several months) in flower. It grows in sandy loam and peat, and requires a warm green-house temperature. Supposed to be from the Canaries. Not new. Figured in the *Botanical Register*, 1845, t. 7.

SYRINGA EMODI, *Wallich*. (The Himalayan Lilac).—This is also received among Himalayan seeds, under the name of *S. indica*. Great expectations were raised respecting it; but it appears to be inferior to our more commonly cultivated Lilacs. It has very large, broad, oval leaves, warted branches, and panicles of small white flowers, the narrow petals of which have uniformly a hook at the apex. It has not the agreeable scent of other Lilacs, but rather a heavy unpleasant smell, resembling that of the Privet. It attains from three to five feet in height; and grows freely in any common soil. Figured in the *Botanical Register*, 1845, t. 6. Natural order, Oleaceæ.

TACSONIA MOLLISSIMA, *Humboldt*. (The downy-leaved Tacsonia).—A strong growing greenhouse or half-hardy climbing plant, allied to Passiflora. It has downy three-lobed leaves, and deep pink flowers, which bloom all through the autumn. It is from New Granada. Figured in the *Botanical Magazine*, t. 4187. Natural order, Passifloraceæ.

TASMANNIA AROMATICA, *R. Brown*. (The aromatic Tasmannia).—An evergreen greenhouse shrubby plant, from Van Diemen's land, allied to the *Drimys Winteri*, or aromatic Winter's bark. It has thick oblong leaves, alternate on the branches, which are terminated by clusters of numerous small whitish star-shaped flowers. The appearance of the plant without flowers is something like that of a small weak Rhododendron; the branches are of a dull purple colour. It is a greenhouse shrub, flowering in April, and growing freely in sandy loam and peat, and only requiring to be kept free from frost. Not new. Figured in the *Botanical Register*, 1845, t. 43. Natural order, Magnoliaceæ.

TETRATHECA HIRSUTA, *Lindley*. (The hairy Tetratheca).—This has been, and is still cultivated under the name of *Tremandra Hugelii*. It is a very pretty green-house shrub, bearing a profusion of gay pink starry blossoms. The flowers are produced from the axils of the leaves, which are small, oblong, and hairy. The whole plant is hairy. Figured in the *Botanical Register*, 1844, t. 67. It is a native of the Swan River. Natural order, Tremandraceæ.

TROPÆOLUM BRICKWOODII, *of gardens*. (Brickwood's Tropæolum).—Under this name a variety of *T. brachyceras*, inferior to that

exceedingly pretty species, has been figured in the *Floricultural Cabinet*. It is there stated to have been raised from seeds brought from Chili, by Mr. Brickwood, and presented by him to H. Berens, Esq., of Sideup, and Mr. Berens' gardener exhibited the plant during the last summer. The flowers are perhaps a trifle larger than those of *T. brachyceras*, but of a very pale dingy yellow, wanting altogether that brightness and vivacity for which the species is so famous. Both plants are very free bloomers. Natural order, Tropæaceæ.

TROPÆOLUM, species(?).—During the autumn of 1844, Messrs. Veitch exhibited a species of *Tropæolum*, with rather large peltate leaves, divided on the front into about five very obtuse and somewhat obscure lobes; the leaves were an inch and a half across: the habit of the plant was rather slender; the flower small, clear pale yellow, with a short spur, much the shape of those of *brachyceras*. It was from Peru. It did not at that time promise to be a very showy plant: we have not seen it since.

TRIMEZIA MERIDENSIS, Herbert. (The Merida *Trimezia*).—This plant is related to the old *Iris Martinicensis*, now called *Trimezia*, and was imported from the snowy mountains of Merida, by Mr. Harris. The flowers are yellowish, with faint transverse brownish coloured bands, and are more handsome than those of its above named ally. Natural order, Iridaceæ.

TURNERA ULMIFOLIA, Linnæus. (The elm-leaved *Turnera*).—A narrow-leaved variety of this species is known as *T. angustifolia*. The present species is a strong growing subshrubby stove plant, with alternate, lanceolate, oblong, elm-like leaves; and large, round, bright yellow flowers, composed of five rounded petals, streaked with radiating crimson lines. It is found in the West Indies. It flowers in July, and through the summer. Not new. Figured in the *Botanical Magazine*, t. 4137. Natural order, Turneraceæ.

VESALIA FLORIBUNDA, of gardens. (The abundant-flowered *Vesalia*).—Under this name a plant has been exhibited at the Royal Botanic Society's exhibition, both by Messrs. Veitch and Son, and Messrs. Lucombe and Co. of Exeter. It is a very neat, small, bushy-growing plant, with opposite oval leaves, and long tube-shaped pentstemon-like flowers; the tube is as much as two inches long, with a very broad expanding five-lobed limb; these flowers are of a light rose colour, and exceedingly pretty. In the nursery catalogues of some of the Belgian nurserymen, it is called *Abelia floribunda*.

WHITFIELDIA LATERTIA, Hooker. (The brick-coloured *Whitfieldia*).—A small bushy stove shrub, with oblong ovate leaves, and

racemes of brick red, funnel-shaped, drooping flowers. It is a handsome plant, from Sierra Leone. Figured in the *Botanical Magazine*, t. 4155; and in *Paxton's Magazine*, p. 147. Natural order, Acanthaceæ.



VERONICA LINDLEYANA.

(Paxton.)

DR. LINDLEY'S SPEEDWELL.

THE shrubby species of *Veronica* have for some time arrested the attention of the cultivators of plants; and our green-houses have, within the last year or two, had a very handsome subject added to the many beauties they already contained, in the *Veronica speciosa*, a stiff bushy plant, with deep green, opposite, bluish leaves, and upright, short, thick oblong spikes of deep purple flowers. At some of the floral exhibitions of the metropolis, plants of this species have been produced, not more than from two to three feet high, and not less than four feet in diameter, and abundantly furnished with their very showy flower heads.

Though scarcely so rigid in its habit, *V. Lindleyana* possesses a similar bushiness and compactness of growth. At the September meeting of the Horticultural Society of London, a fine bushy plant of this species was produced in flower, the first, as far as it is known, that has been flowered in Europe. This plant was flowered by Mr. Glendinning, of the Chiswick nursery; having been received by him from Mr. James McNab, curator of the Royal Caledonian Horticultural Society's garden, in Edinburgh. It had been raised from seed sent from New Zealand, in October 1843, by Mr. Thomas Cleghorn, formerly a nurseryman of Edinburgh.

The habit of the plant is excellent; in fact, it grows into a dense dwarf bush, loaded with its long pendent spikes of flowers; which, if not

very gay in colour, at least compensate for this deficiency by the exceedingly graceful manner in which they are produced, and by their profuseness. It forms an evergreen under-shrub, with opposite oblong, lance-shaped, acute, sessile (without stalks), shining leaves, and long spike-formed racemes, issuing from the base of every leaf, from six to eight inches long, gracefully pendent, and crowded with small pale lilac flowers, fading to white, with purple anthers. It looks best when the colouring has passed off, as the then white flowers contrast better with the green of the foliage. It appears to flower in the autumnal months; and requires a green-house.

The cultivation of these plants is not by any means difficult; they require plenty of pot room, and to be placed in a light airy situation. A soil composed of the greater proportion of sandy loam, mixed with turfy peat, or leaf-mould, would be suitable for it. The pot should be well drained, as indeed should always be done when a plant is placed in contact with a considerable mass of earth. During all the earlier stages of growth, the plant should be continually stopped; that is, the tops of the young shoots should be pinched out, when they have extended a few inches, in order to maintain a compact and bushy habit of growth. *V. Lindleyana* belongs to the natural order *Scrophulariaceæ*; and in the Linnæan arrangement to *Diandria monogynia*.



DYSOPHYLLA STELLATA.

This is an exquisitely beautiful little plant, forming a small branching tuft, decorated with elegant upright spikes of purple-lilac flowers. The leaves are small, growing in whorls. It has been found difficult of culture. An orchidaceous house, where it can enjoy a warm moist atmosphere, seems to suit it. A successful course of practice is to sow seeds in

January, in pots of sandy loam and peat, not quite filled; they are not to be covered with soil, but gently pressed down on the surface, the pots covered over with a piece of glass, set in saucers of water, and placed in a heat of 70 degrees. In five or six weeks the young plants appear, and as soon as they can be handled, they are to be potted singly, into small or three-inch pots, in the same kinds of soil: they are then to be placed in an orchidaceous house, and grown there throughout. They are to be shifted into a size larger pot, when the roots get numerous; and about May, into five, six, or eight-inch pots for blooming, according to their strength. They are not to be watered overhead, but require abundant watering at the roots; and are benefited by clear manure water once or twice a week when they get strong. In the earlier stages of growth, the young shoots strike readily as cuttings, but as far as present experience goes, the plants are not to be kept after flowering.

POTATOES FROM SEED.

THERE is a foolish notion abroad, that certain Potatoes have deteriorated in quality, and that unless something be done to prevent it, the excellent vegetable that has become a second staff of life will be lost to us. Those who hold this doctrine can know very little of practice; and as they follow it up, by enforcing the necessity of raising Potatoes from seed, as if they were the original suggestors of this precaution, they proclaim still more their ignorance of what is going forward. Potatoes have been raised from seed annually for many years; hence the numerous excellent kinds which are to be had, differing in form, and season, and character, but good in their several claims. We dispute the assumed fact, that any sort of Potato deteriorates in quality, except by mismanagement; but such is the disposition of this useful article, that it will grow almost any where, and under almost any circumstances, and the consequence is, that cultivators treat it worse than they do any other subject of the farm or garden. Thus a man grows because his grandfather did before him—the Champion, and the Shaws, year after year, from the same seed, on the same spot, and subject to the same treatment, until, like any other vegetable that grows, it is weakened and becomes worse in quality. He gets his yield, and it fetches something near his price, and that is all he cares for, until he has carried on the game too far, and then he discovers that Potatoes wear out, get worse, and will one day be lost, though while he is complaining, both varieties of the Potato are grown in perfection, and are equal in quality to the samples had in their best days. The

fact is, that no man ought to grow from the same seed, on the same ground, although there is no impropriety in his cultivating the same varieties. Again, no one ought to grow Potatoes at all on the same spot two seasons following. It is true, there are lands that will bring them well enough to pay,—but it is like driving a horse double stages, he cannot do the work so well, and he is all the worse for it when it is done, although the unfeeling owner, who thinks of nothing but the present, has not calculated upon the harm done to the willing beast. The raising of Potatoes from seed, is to produce new varieties, which, upon some point or other, are better for particular purposes than the old ones. There are many points worth seeking in a new Potato,—earlier, later, more hardy, larger, smoother, a different shape, a different colour, a more extensive bearer, a more dwarf habit; thinner skin if early, thicker skin if late; these, and many other points, would be desirable in new kinds, even supposing they are not one jot better in flavour; and for many years, practical men have been raising seedlings, and adding new and good sorts to those already possessed, although the wise men who have ascertained that Potatoes deteriorate, suggest it as a new thing. There may be some colour for an inexperienced man's conclusion, that Potatoes wear out, in the fact, that when even a popular variety is fairly beaten by a new one, sensible men cultivate the new, and abandon the old; but it does not follow, nor is it the fact, that the old one had got worse, but simply that the new one proved better, which will alone account for the abandoning of the undeprecated, but still beaten variety. There are early Potatoes called Fox's seedling; it was for years popular, because it was early and well-flavoured; but it was always a bad cropper. It is as good now as it was the first season it was grown, but we have Potatoes as handsome, as well-flavoured, and as early that crop well. Does the abandoning of Fox's seedling proclaim that it has got worse? By no means,—it only follows as a matter of course, when men prefer a heavy to a light crop. These silly assumptions and false conclusions arise from a want of practical knowledge, and a desire among a class of theorists, to be perpetually dabbling in literature, the name by which they dignify their lucubrations. That there is great encouragement for the raising of seedlings, where so much is to be gained, is certain, and no possible evil could come of a universal disposition to raise them. In this purpose of giving the amateur an opportunity of indulging in this gratifying pursuit, we offer a few practical suggestions, perfectly applicable to the conditions of most unprofessional persons who have a garden. We do not

in this case go into the minutia of seed-sowing, nor do we think it worth recommending any particular crop of the sorts to produce the seed. Nature is in this instance sportive enough—and we have had from a single Potato plum almost every form and colour that can be imagined. There will be no difficulty in procuring seed. In the month of April sow this in a slight hot-bed, as you would Dahlia seed. As soon as it is up, and the plants are large enough to handle well, put one each in three-inch pots, and place them all in the same and other similar slight hot-beds; give them air, and shade them from the sun with calico, or some other slight fabric, that will not impede the light, otherwise they will draw; as soon as the weather will permit safely, dig a piece of well-conditioned ground, not fresh dunged, and plant them out one foot apart in rows, three feet from each other, without disturbing the balls of earth, quite level with the surface; water them in well, and when the ground has dried a little, earth them up neatly about three inches. It may seem to be taking some trouble that may be dispensed with, to treat them in this way, but the reward is in obtaining the first season a full-sized crop, enabling you at once to calculate upon what the several varieties will do, instead of procuring, as we do in the ordinary way, a stunted crop, which has to be planted another year, before we can form any notion of the natural size. When the haulm of any one has died down, or turned yellow, dig it up, and if it exhibit no promise, throw it away. For instance, those with the eyes deeply sunk are perfectly useless,—we have so many good ones, that are plump, and cause no waste. If specky, or scaly, or very rough, there is no temptation to keep them, unless it should happen in either of these cases that there is some other extraordinary quality. If, however, you find a well-formed, plump Potato, with a clear skin, and the tubers run pretty even, as to size, it may be worth marking and laying by with a description. As others die down, dig them also, and reject or preserve them, as they seem to deserve. Many will be found with no tubers at the root; others with very few; some others, with one or two large, and the rest all diminutive; none of them can be any great acquisition, nor are they worth trying again, unless there is some remarkable difference from all others in their form or colour. In a general way, all those with long straggling branches, and large quantities of foliage, are useless; and those, on the contrary, with very dwarf foliage, are proportionably desirable, because they do not deprive the earth of the sun and air, both of which are essential to the swelling and maturing of the tubers. In this way you continue to dig only such as indicate ripeness by

the decay of their stems and leaves, until you have dug up the whole, taking, however, as much notice of the latest as of the earliest, because the capacity to withstand cold and frost is one of the most valuable qualities we could produce, were it possible to do so; and although there is not the slightest probability of accomplishing this to any vast extent, it is certain that we already possess some that stand cold better than others, and that there may yet be an increase, however small, in this desirable capacity. We will suppose now that all the produce that we intend to try again, is, after proper drying, placed away separately, with the dates of their digging, and any memorandum as to habit of growth that the cultivator thinks proper to add. They must be kept dry and cool, but thoroughly protected from frost, and be examined from time to time, to see that the eyes do not push to any extent. When they indicate growth is the time to plant them, no matter what the season be: let there be a good four inches covered over their highest part, and put the sets in whole and two feet apart; let there be a large label (numbered so as to refer to the description) placed in the ground, and beginning with the largest plant, or with the next largest, until all that sort is done; then put the label of the next sort down, and do the same with it, and so on until the whole are planted. If there is from the early planting any danger of frost, that would penetrate four inches, to reach the tuber, cover the row with peas haulm, which may be kept in its place by means of a double row of stakes, to keep it from being blown away. It must come off again in mild weather, and especially if any are showing above ground, and be put on again at night. All this trouble would not be rewarded by any ordinary crop of Potatoes, but some of them may be the origin of new and popular varieties, which it is impossible to value too highly, and therefore, as in the raising, they may well reward us for the extra cost, whether of labour, or money, or both. It must be remembered that all are not to be planted at once,—those which start their buds should be got into the ground as soon as they start, but as others come forward, they ought to be attended to in turn. It would be wise, on the occasion of planting, to put a date on the labels, and make memorandums in the same way as they were made on taking up. It will occur, perhaps, that some will be six weeks later planted than the first; but this should be observed. All Potatoes which are being tried, should be planted as soon as they begin to grow, and not sooner. They should also be dug up as soon as the haulm turns yellow and decays, and not sooner. When, therefore, you observe any of them turning yellow and

decaying, dig up the sort, and the produce will convince you whether they are worth keeping. If they retain that characteristic for which they were sown, cook one or two to taste them, and supposing them to be good, lay them by for propagating to the fullest extent. Go through all of them as they decay in like manner, and if desirable, take other opinions, before you have too much trouble with them. He who can afford to take the trouble, will be highly gratified, because he is able the first year to reject all that are not exactly what he wants. When trusting to seed in the open air, they do not bring the first season any thing like fair samples of any of the produce. We dismiss this subject for the present; it may be the means of inducing some amateur to try an experiment, which will afford much interest, and it may be, that some splendid improvement upon the Potatoes we now possess will result; and while we contend that the Potato has not deteriorated, and will not deteriorate under proper management, we hesitate not to recommend the raising of new varieties from seed, until we can say we possess early, late, prolific, well-flavoured varieties, which cannot be beaten.



ANEMONE JAPONICA.

(Siebold.)

THE JAPANESE WIND-FLOWER.

THIS is a very vigorous-growing, herbaceous perennial, of great beauty. It has the kind of compound, ternate, lobed leaves, possessed by many of the Anemones, but in this case they are large, and coarse, and unequally serrated on the margin. It grows two feet high, or

more, and has purplish-red flowers, scarcely inferior to those of the Chrysanthemum, or the Poppy Anemone of the East : they are, indeed, not unlike a small semi-double Dahlia bloom, and are fully as large as a small Dahlia. Its degree of hardness is not yet ascertained, but it is expected to bear the severity of our winters,—and if so, will prove a most valuable addition to hardy border flowers. It flowers in September and October ; and was introduced by the Horticultural Society, who received it from their collector, Mr. Fortune, in 1844. Mr. Fortune met with it at Shanghae, the Japanese port of China.

According to Dr. Siebold, it inhabits damp woods on the edges of rivulets, on a mountain called Kissune, near the city of Miako, in Japan. It grows also at considerable elevations on the mountains in the centre of Japan, whence Siebold concludes that it will bear the rigour of a continental winter. It is much cultivated by the Japanese for its beautiful flowers.

In the garden of the Horticultural Society, it has hitherto been kept in a pot, in a cool green-house : this was, however, on account of its scarcity, and for fear of losing it ; and such treatment is by no means expected to be required. It will grow freely in any rich, light loamy soil ; and requires a considerable, rather abundant, supply of water.

In the natural arrangement it ranks under Ranunculaceæ ; and in the Linnæan, under Polyandria polygynia.

THE SOLANUMS.

THERE are two species of Solanum, natives of Britain, which are employed in medicine, the Solanum Dulcamara, and the Solanum nigrum, both common weeds.

Solanum Dulcamara, (the Bitter-sweet Dulcamara, or woody Nightshade,) grows abundantly on moist banks, on old walls, in hedges, and on waste places. It is also found in temperate countries in Europe, Asia, and America. It is a slender, branching, climbing plant, with shrubby brittle zigzag stems, growing eight or ten feet high, supported by the bushes among which it grows. The leaves are generally ovate, or ovate heart-shaped, the upper ones usually more or less halberd-shaped, or with a small lobe or auricle at the base of each on each side; they are generally smooth, all entire at the margin. The flowers are produced in loose branching clusters, either opposite the leaves, or terminal, drooping, and spreading ; they are divided into five pointed segments, and are of a purple or violet colour, with yellow projecting stamens ; they are succeeded by roundish oval berries, which, when ripe, are of a bright red colour, and contain a fleshy pulp, in which numerous

small seeds are embedded. The flowers are very elegant, and are produced about the month of June, and the berries become ripe towards autumn, and then have a very beau-



Solanum Dulcamara (one-third natural size.)

tiful appearance ; indeed, viewing it apart from its plebeian character, the plant is by no means an unhandsome one. The plant is deciduous, that is, shedding its leaves on the approach of winter : it may be readily identified from the annexed figure. There are several recorded varieties of this plant, differing for the most part but slightly from the original ; thus we have *alba*, with white flowers ; *carnea*, with flesh-coloured ones ; *violacea* and *hirsuta*, both with purple flowers ; *plena*, a double flowered variety ; *variegata*, with leaves variegated with white ; and one or two other slight variations. All these are found in Britain.

The Dulcamara is a very dangerous narcotic plant ; both the stems and roots, as well as the berries, are poisonous. The stems, when broken or bruised, yield a strong and peculiar odour, like rats and mice : when chewed they have first a bitter nauseous taste, which is quickly followed by a considerable degree of sweetness, and hence the name of Dulcamara, or bitter sweet, which is compounded from *dulcis*, sweet, and *amara*, bitter. The roots smell like potatoes, and produce the same kind of sensations as the stems. The berries are poisonous, and by children, and persons unacquainted with plants, might readily be mistaken for currants, having a very tempting appearance ; they excite vomiting and nausea, and it is stated that thirty of them killed a dog in less than three hours, remaining undigested in the stomach ; and there are numerous recorded instances of their fatal

and deleterious effects on the human constitution. Here we have an illustration of the extreme importance of a familiar acquaintance with plants—especially wild plants—by persons of every class. The *Dulcamara* was formerly much esteemed as a powerful medicine. The stipites, or younger branches, are the parts directed for use; these should be gathered in the autumn, and used either when fresh, or after being dried. It is principally used in the form of a decoction, or watery infusion, sometimes under that of extract. It has been stated to possess discutient and resolvent powers; and is also diaphoretic. "Trained to a single stem, and supported by a stout iron rod with a parasol-like top, this common hedge weed might form a very handsome gardenesque pendulous tree; or it might cover a domical bower." (*London*.)



Solanum nigrum (half natural size.)

Solanum nigrum, (the black or garden Nightshade,) is a low annual weed, growing about two feet high, common in waste places all over the world. It is a bushy, fetid herb, with numerous angular branching herbaceous stems, and ovate leaves, obtusely dentate, or wavy, and undivided. The flowers are white, in umbels from the intermediate spaces between the leaves; they have a musky scent. The berries are globular, black, (reported to be sometimes yellow,) and shining. There is a variety called *miniatum*, which has more deeply-toothed leaves, and red berries; this latter is found in Jersey. The plant appears to possess the deleterious qualities of the other Nightshades in a very high degree; it is narcotic, and its extract is said to possess nearly the same power as lettuce-opium, even its smell is said to cause sleep. It was formerly employed as a discutient, and used as

an anodyne, and when bruised applied either in poultices or baths to painful wounds.

Besides these British species, there are several others used medicinally. *S. paniculatum*, a shrubby species with bluish white flowers, is much esteemed as a deobstruent in Brazil, where it is called *Juripeba*. *S. Jacquini* is considered by the native practitioners in India as an expectorant. The juice of *S. bahamense* is administered in the West Indies as a gargle, in cases of sore throat. *S. mammosum* is said to be bitter, and a valuable diuretic. *S. cernuum*, a shrub or tree in Brazil, is also employed; a decoction of the flower and leaves is said to be a powerful sudorific. And in Demerara, a spinose species called *Barabara* is reported to be an antidote to the bite of the rattlesnake.

THE CARROT.

THE cultivated Carrot, in its several varieties, is only a highly improved state of the wild Carrot, (*Daucus Carota*), a biennial weed, common in pastures and by the sides of hedges, especially on a chalky soil. However strange it may appear at first sight, that the thick fleshy root of the garden Carrot should result from the thin, woody, and harsh root of an almost worthless weed, yet that such is the case has been recently proved by raising plants from wild seed, although Miller, about a century ago, was not able to effect any alteration in the original plant. But in 1833, M. Vilmorin, of Paris, by repeated sowings at length succeeded in obtaining some plants with more fleshy roots, about half a dozen, but only from the summer sowing, as all sown earlier had run to seed. These roots were carefully preserved and replanted the following season; and in 1839, the fourth generation produced good sized Carrots. The process of amelioration will be seen by the following statement:—First generation, five or six roots from amongst a large number, very indifferent, ill formed, but tolerably fleshy. Second generation, about a fifth part of the crop was tolerably good, middle sized and small. Third generation, proportion of good roots about two-thirds, and they had increased considerably in size. Fourth generation, form improved and refuse of crop not exceeding one-tenth. Of course only the most promising roots were planted for seed, but still the rate of improvement was very rapid, and M. Vilmorin has stated nothing that the appearance of his roots did not fully bear out. In colour the roots varied through all the shades from white to yellow, orange and purple, thus plainly indicating how easy it is to multiply varieties of vegetables.

Numerous varieties of Carrots are mentioned in the nurserymen and seedsmen's lists, but no doubt many of these names are synonymous. The following list contains nearly all the really distinct varieties, and will furnish all the sorts really worth cultivation, either in the garden or the field. Carrots are usually classed in two groups, *long* and *horn*; the first group adapted for late crops and field culture on account of their size and produce, and the second group, for early forcing and small gardens, on account of their earlier maturity, smaller size, and generally superior flavour.

Among the long varieties, one of the best is *long red Carrot*, the Surrey, or Cherstey Carrot of the markets, and no doubt known by many other names in various parts of the country: leaves of moderate length, roots long, tapering gradually; flesh reddish, heart yellow. Perhaps the best for winter use.

The *long orange Carrot*, the Sandwich Carrot of some: leaves long, root large, thick crowned, tapering sharply; flesh orange, heart pale yellow. Much cultivated, but inferior to the preceding.

The *long yellow Carrot*: leaves strong and tall, root very long and slender, tapering slowly; flesh and heart pale yellow. A coarse variety, of inferior flavour, but valuable for field cultivation.

The *yellow Carrot*: leaves of moderate length, root rather short, tapering quickly; flesh pale yellow, heart rather deeper coloured. A variety more esteemed in France than here.

The *Altringham Carrot*: leaves strong, root long, thick, tapering gradually; flesh deep coloured. This is a very highly prized variety, apparently intermediate between the two groups, attaining the size of the first, and having the habit and flavour of the second. The crown of the root grows more exposed above the surface than most of the other varieties, and acquires a green colour.

The *purple Carrot*: leaves tall, root moderate size, thick at top, tapering suddenly; flesh deep purple outside, next yellow, heart dark yellow. More used in France and Spain than here, and though very sweet, is deficient in flavour.

The *white Carrot*: leaves moderate, root short, thick at top, tapering suddenly; flesh white, heart whitish, delicate, but not high flavoured, and does not keep well.

The *white Belgian Carrot*: leaves strong, root large, growing above the ground, and acquiring a green colour, tapering very gradually; flesh very white and sweet. A variety highly prized for agricultural purposes, producing very heavy crops in favourable soils.

The varieties of the second group are not

so numerous, and have acquired their name from the short cylindrical shape of their roots, ending bluntly, with a small tap root, thus something resembling a short horn.

The *long horn Carrot* has a small crown of slender leaves, root long, blunt; flesh reddish orange, heart nearly the same. Excellent for summer use; flavour very good. Originally introduced from Holland.

The *common early horn Carrot*: leaves moderate, root thick at top, tapering a little; flesh reddish, heart yellow; flavour good. This is the variety usually forced in England.

The *early red horn Carrot* (the scarlet horn of some): leaves dwarf, root short, thick, nearly cylindrical; flesh reddish, centre reddish, afterwards pale yellow. The earliest and best adapted for forcing.

Several other names may be found in the dealers' lists, but the above are distinct, and will afford variety enough for all purposes. Indeed, by careful selection of the handsomest roots, as many varieties might be made as fancy might dictate, and this practice should be rigidly followed in selecting roots for the purpose of saving seed. The roots so chosen should be carefully planted in a piece of rich ground as soon as the weather is open in spring, and well attended as to watering, if the season prove dry, keeping them clear of weeds, and stirring the soil deeply occasionally about the plants. The stalks should be cut before the seed becomes too ripe, and hung up in an airy place to dry, and afterwards threshed or rubbed out, cleaned, and put by in bags or papers, according to the quantity.

The Carrot succeeds best in a sandy soil, of good tilth, but from its being universally required, it is grown in all descriptions of soils and situations. Even in free soils, a deep stirring or trenching is highly beneficial, and should never be neglected on such as are heavy or retentive of moisture. If a piece of ground, trenched and dunged, be ready for a main crop, about the beginning of March to the beginning of April, proceed to sow the seed in drills, using the long red or Altringham for deep free soils, and the long orange, or long horn, where the depth is less. Unless very sure of the goodness of the seed, it is advisable to sow rather thick, as the plants are easily thinned, and no great loss is incurred; but if not thick enough, transplanting is a very good method of making up the deficiency. The distance between the drills may be from one foot to fifteen or eighteen inches, according to the variety sown, and the depth and fertility of the ground. The after routine is the same as for nearly all other crops, keeping down the weeds, stirring deep between the rows frequently, and thinning out, until finally

the plants are from six to nine inches apart. When the tops are decaying, and before sufficient frost comes to damage the roots, they should be carefully forked out of the ground, and stored away in a cellar or proper storing-house, packed in sand, care being taken that the temperature of the place be kept very low, as otherwise the roots will begin to grow, and exhaust themselves long before the spring crops are ready to supply the demand.

Where it is an object to have a supply of young carrots at an early period, sowing of the red or common horn varieties should be made early in January, and repeated every three weeks or month, according to the demand. The earliest sowing should be made on a moderate hot-bed, fitted with a frame and lights; another to maintain the supply until those in the open ground are ready, may be made on a similar hot-bed, hooped over so as to allow of mats being laid on at night to protect the plants; another sowing of the same varieties must be made on a sheltered border or other favourable spot until the main crops are ready. In general, two or three sowings will be found sufficient until the main crop has arrived at a useable growth.

THE PARSNIP.

THE cultivated Parsnip has been originated from a weed (*Pastinaca sativa*) of common occurrence on chalky land, in pastures, by road sides, and on the sides of hedges, banks, &c. It is a biennial plant, and the difference between the wild species and the garden variety is very slight, except in the greater development of the root, and the smoother state of the leaves, in the last. Whether the wild plant could be as easily induced to form fleshy roots as the wild carrot has done, as shown by M. Vilmorin's experiments, in only four generations, would be worth trying; and, as the increase to be looked for is only the greater development of cellular tissue in organs already present, not the production of new, or changing of existing organs, as in the cabbage tribe and others, a similar result might be expected.

The proper course to pursue in effecting this improvement of the wild plant, would be, as in the case of M. Vilmorin's experiments with the carrot, to sow the seeds in each succeeding generation on ground comparatively rich, and in the best possible condition as regards culture; and to select from each crop only those which indicate some degree of improvement, from which to procure seed for the next crop. By perseverance in this course, there is little doubt but that success would follow.

The varieties of Parsnips are not numerous,

although a number of different names may be found in the dealers' lists. The whole of them, we believe, may be reduced to the four following:—

The *common Parsnip* has coarse strong leaves, and a long tapering root, with the crown generally below the surface.

The *Guernsey Parsnip* differs from the last in its stronger growth and broader leaflets, and the roots are also larger, when grown under similar conditions, especially if from seed saved in Guernsey.

The *hollow-crowned Parsnip* is distinguished from the foregoing varieties by its fewer leaves, shorter and more abrupt roots, and by the leaves being inserted in a sunken pit, as it were, on the crown of the root, which is generally level with, or below the surface of the soil. These three varieties agree in similarity of flavour.

The *Turnip-rooted Parsnip* is the smallest variety of all, with few leaves, and a short funnel-shaped root, tapering very abruptly, with a very broad shoulder, growing above the surface of the soil. This is by far the earliest variety, and was introduced from France about 1822. It is of a yellower colour than the others when dressed, and of very superior flavour.

The culture of the Parsnip is very simple, little further being required than to keep the crop free from weeds. As this root is seldom in request during summer, the general way is to sow a main crop about the beginning of April, of course in drills about eighteen inches apart, and afterwards to thin the plants at the successive hoeings, until they stand from six to nine inches apart in the rows. At every hoeing the ground should be well and deeply stirred between the rows, and left light and open about the plants. In the autumn, when leaves are beginning to decay, the roots should be dug up, and partially cleared from the mould, care being taken not to bruise the roots more than is unavoidable, and after lying a little while to dry, they may be stored away in a bin of sand, in a cellar or proper root-house. In the south of England they are often left in the ground until wanted, even until they begin to grow in the spring; and very well they keep, being plump, sound, and in a much better state than if they had been housed, as is generally done. For deep soils the first two are preferable, especially the second named variety; for shallow soils, the third named; and the fourth will only be used by the very curious in vegetables. Those who are fond of the sweet flavour of this root will find it much increased by roasting in hot ashes, or otherwise, and its consistency will also be firmer, and not so watery as when they are boiled.



Portion of a Filament magnified.



Callithamnion gracillimum.

BRITISH SEA-WEEDS.*

THE popular names of some of the most beautiful objects in nature will be best understood by many of our readers, who too frequently pass by unheeded natural curiosities of deep interest, and suffer the familiarity of a subject to wean them from all notions of its importance. Few, however, of those who visit the sea-shores come away without some relics; and, among the most varied and interesting of these may be mentioned the marine plants, which excite their admiration, though called by the undignified names of sea-weeds. The work under notice treats of these varied and wonderful productions in a scientific manner; and, besides accurately describing their general and botanical features, supplies us with very beautifully executed coloured engravings of

the plants, and magnified specimens of particular parts which illustrate the fructification. The part before us is the first of sixty, which are to complete three volumes; and which three volumes will, if the same rate of embellishment that characterises the first be continued, contain nearly four hundred plates. Nothing is more common than to see the persons who reside inland, load themselves home with "sea-weed" when they pay a visit to the coast. Many, indeed, make collections, which they save between the leaves of books; and nothing is wanting but a knowledge of their name, nature, properties, and general character, to give such collectors a true zest for the study of these submarine vegetables. The author of *Phycologia Britannica* has supplied these in a work, in every way fitted for the table of the drawing-room, or the shelves of the boudoir. To each coloured plate is appended a description with reference to authors who have mentioned it before, and such other particulars as can only be appreciated when read; and we shall afford an opportunity of doing this, by quoting the entire letter-press belonging to the fifth Plate, which is the representation of an extremely beautiful subject, of the natural size, and dissections of the plant very much magnified, a copy of which heads our article.

* *Phycologia Britannica*: or, a History of British Sea-Weeds, containing coloured figures, generic and specific characters, synonyms, and descriptions of all the species of Algae inhabiting the shores of the British Islands. By William Henry Harvey, M.D., M.R.I.A. Keeper of the Herbarium of the University of Dublin. In three volumes, vol. i. London: Reeve, Brothers, King William-street, Strand. 1846.

"Sec. RHODOSPERMEÆ. Fam. *Ceramiceæ*.
"Plate V. — *CALLITHAMNION GRACILLIMUM*, Ag.

"GEN. CHAR. *Frond* rosy, or brownish red, filamentous; *stem* either opaque and cellular or translucent and jointed; branches

jointed, one-tubed, mostly pinnate, (rarely dichotomous or irregular;) disseminations hyaline. *Fruit*: 1, external *tetraspores*, with colourless borders, scattered along the ultimate branchlets, or borne on little pedicels; 2, roundish or lobed berry-like receptacles (*favellæ*), seated on the main branches, and containing numerous seeds.

"*CALLITHAMNION gracillimum*; frond distichously branched, fan-shaped; stems capillary, decomposito-pinnate; upper plumules long, narrow, ovate or lanceolate, spreading, bi-tri-pinnate; joints of the stem cylindrical, three or four times, of the pinnæ two or three times longer than broad, veinless; tetraspores borne on the tips of the pinnules.

"*CALLITHAMNION gracillimum*, *Ag. Sp. Alg.* vol. ii. p. 168. *Harc. in Hook. Br. Fl.* vol. ii. p. 345. *Wyatt. Alg. Danm.* no. 45. *Endl. 3rd Suppl.* p. 34. *Kütz. Phyc. Gen.* p. 372.

"*HAB.* Very rare. On mud-covered perpendicular rocks, near low-water mark. Annual. Summer. On the pier at Torquay, *Mrs. Griffiths*. Milford Haven, *Mr. Ralfs*. Falmouth, *Miss Warren*.

"*GEOGR. DISTR.* Atlantic coast of France, *Grateloup*. South and West of England.

"*DESC.* *Fronde* tufted, 1-4 inches high, exceedingly slender, distichous, irregularly branched; main branches rather few, simple, 1-2 inches long, unequally but closely plumulate along their whole length, having an ovate or lanceolate figure, and all attenuated at the point. Lower plumules short, vaguely pinnate; upper elongate, lanceolate, spreading, bi-tri-pinnate. All the divisions alternate, and a branchlet usually springing from every joint. The colour, when quite recent, is a deep red, becoming rose-red in fresh water, and if kept long in that medium the frond discharges a quantity of brilliant carmine powder, which permanently stains paper. *Tetraspores* very minute, elliptical, borne on the tips of shortened pinnulæ. *Favellæ* roundish or irregularly lobed, springing from the larger branches. Substance delicately membranaceous and flaccid, closely adhering to paper.

"This extremely elegant plant, perhaps truly the *most graceful* of the very beautiful genus to which it belongs, was first gathered

on the shores of France by *M. Grateloup*, who communicated specimens to the elder *Agardh*, by whom it was published in the year 1828. Shortly afterwards the indefatigable *Mrs. Griffiths* discovered magnificent specimens growing along the mud-covered base of the harbour pier at Torquay, in which locality it may be found in more or less plenty every summer. More recently it has been found in Wales and Cornwall. From *Mrs. Griffiths* it received the very appropriate name of "*Fern-leaf*," aptly expressing the finely pinnated character of the branches, which do indeed closely resemble fairy ferns, so delicate that it is altogether impossible in a figure to do justice to their beauty. Our representation of the natural size must therefore be regarded as merely giving the general effect of a specimen held at arm's length from the eye.

"As a species, it is very closely related to *Cal. thuyoides*, with which it agrees in many characters, but from which it may be known by the greater proportionate length and breadth of the plumules, their more distichous arrangement and closer position; the shorter and more cylindrical joints of the main branches, and larger size of the frond. Both species agree in producing their *tetraspores* on the tips of the ultimate ramuli, a character by which they differ from all other British species with decomposed-pinnate fronds."

The plate represents the plant of the natural size; and the following parts magnified: a plumule; ramulus with tetraspores; ramulus with a favella; portion of a favella ruptured, and discharging seed; and tetraspores removed and dissected. All these are most beautifully and delicately executed.

In this way it is proposed to figure and describe all the genera and species of sea-weeds, opening an entirely new field of study to the naturalist, and a fund of entertainment and interest for thousands, whose fancy will only lead them to collect and arrange them. It is a work fully worthy of the Botanist's attention; and nobody, who can assist the author with rare specimens, should, on any account, neglect the opportunity of doing so.

GARDENING CALENDAR FOR FEBRUARY.

THE CONSERVATORY.

This ought now to be very gay, with "flowers of all hue." Besides the various plants which have been brought into bloom in the forcing-house, according to the directions given last month under the head *Forcing-House for Flowers*, and in which a similar course

of treatment must be continued, there will be very many green-house plants producing flowers naturally, or with but very slight artificial assistance; and as many of these as may be requisite, must, of course, be taken to decorate the conservatory. If the house has

been kept comparatively warm and close, as recommended last month, (p. 3,) some of the permanent plants will also be producing flowers; and this combination will be certain to constitute a very gay and brilliant assemblage.

Temperature, &c.—The general treatment of this structure, as regards temperature, atmospheric moisture, and ventilation, must be continued much the same as last month. (p. 3.) The natural supply of light and heat will yet be limited, and it will, therefore, not be desirable to apply too much of this latter artificially. Nevertheless, as the object in this structure should be to produce display rather than very perfect growth, some little liberty may be taken in this respect. The degree of heat—45 to 50 deg.—recommended for last month, will be sufficient to secure all the growth and excitement which is as yet desirable, and abundantly sufficient for all plants actually in flower. If evaporating pans, filled with water, are placed on the pipes or flues, they will effect the regulation of the moisture to the degree of heat applied.

Flowers.—Most of the plants previously noticed as blooming naturally, will now be in bloom in greater perfection, and many of the New Holland and Cape plants will also be flowering. Of the forced flowers a constant succession will have been kept up. The conservatory ought, therefore, to be more gay with flowers during the present month than it was last month.

Climbers.—Where the object is to have these in bloom very late in the summer or autumn, the pruning of them should be deferred till this month. Those pruned in autumn, which will be making an early growth, must have the superfluous shoots disbudded; (that is, rubbed or taken off as soon as the buds are sufficiently swelled, to determine what is required, and what is not,) and they should be properly arranged and secured as their growth increases.

Watering the permanent plants.—It sometimes happens, that from fear of the soil becoming too wet, it is allowed to get much too dry for the well-being of the plants; and those which are advanced to a flowering state, especially such as Camellias and Rhododendrons, suffer much injury. The only safeguard is to examine the state of the soil, not merely on the surface, but at the depth of a few inches, where the roots are; and if it is found to be drier than is compatible with the well-being of the plants, the remedy is to apply a moderate soaking of water—enough must be given to remove the evil, if any advantage is to be derived.

• *Insects.*—Where the eradication and removal of them is not completed, whatever spare time can be commanded, should be devoted to

their destruction. Such as the white and brown scale and mealy-bug ought to be removed from the plant by a careful process. If the plants are occasionally syringed with clear soot water, the insects will be kept down and soon eradicated. When plants are clean, it is best to keep them so by liberal treatment, keeping a sweet atmosphere, moistened in proportion to the degree of heat applied.

THE GREEN-HOUSE.

THIS is the month for potting the greater number of plants which have been kept through the winter in small pots, and which are required to attain to considerable perfection during the ensuing summer. The exact period of the month—that is, whether in the middle, or towards the end—at which the operation should be performed, will depend on various circumstances: such as the present and prospective state of the weather, the severity or otherwise of the winter, and the effect it has had upon the plants. The promise of ungenial weather at this time of the year, should delay the operation, and, especially, if from the severity of any part of the winter the plants have been enervated in a confined atmosphere, and with too much artificial heat. Now, although this may be considered the month for potting most of the free growing green-house plants, it must be understood that the operation is not to be one of routine, in which all the plants are to be alike treated; on the contrary, the most vigorous kinds, and the most vigorous plants are to be first done; and the others, either at a subsequent period, or they may sometimes be benefitted by being replaced with fresh soil in the same pots, after having some of the old effete soil removed. In all cases, the weaker plants should have proportionately smaller pots, and if it can be so arranged, a less rich and exciting compost than the stronger ones. In most cases, it will be the best course to devote the earlier part of the month to the preparation of composts, (which should lay in dry heaps through the winter) materials for drainage, pots of various sizes, &c.; deferring the shifting of any plants till towards the end. If pots that have been previously used are again employed, they should be washed inside and out, and made perfectly clean.

HOUSE FOR MISCELLANEOUS PLANTS.—Where there is but the convenience of one green-house in which the various tribes known as green-house plants have to be grown, some little difference as to the treatment of the different classes of plants may be afforded, by collecting those of allied habit into groups. If they are of delicate habit, they do not thus become overgrown by coarser plants; and if they are themselves of strong growth, they do

not then injure those which are less vigorous : besides, in the application of water, and the admission of air, the peculiar wants of each group may, to a certain extent, be thus met. This arrangement of the plants into groups, besides the advantage it affords as regards treatment, is also much more effective than an indiscriminate, miscellaneous arrangement, in which the only guiding principle has been to place the whole, so as to show an even sloping bank of leaves and flowers, and to intermix, as much as possible, plants with large and diminutive foliage. The treatment of the different groups of plants must be assimilated, as far as the circumstances admit, with the directions given under the separate heads.

Succulents.—Succulent plants will not, generally, require much additional moisture yet, although some of the plants of *Cereus*, and *Epiphyllum*, may be taken in succession into a warm house to cause them to expand their flowers. These plants should have all the air possible, and very little heat. If they are not grown in a separate house or pot, they may yet stand on any of the back dry shelves of the ordinary green-house.

Aloes, and other plants of this kind, must not get too much water—very moderate supplies are sufficient—and they ought to have the benefit of enjoying a tolerable free exposure to the air.

Melocacti.—Towards the latter end of the month, these plants may receive a slight increase of temperature, accompanied by more moisture : put them in the warmest situation the green-house affords.

Kalosanthus.—These beautiful plants, more generally known by the name of *Crassula*, are now to be treated with a view to produce flowering-plants for the summer and autumn. Young plants raised twelve months ago, and grown during summer into stocky, vigorous plants, may now be shifted, and must be treated well to make strong shoots with vigorous, healthy heads of flowers. A good warm green-house is the best place for them.

Lachenalias.—These beautiful little bulbous plants, potted in autumn, and placed on a slight bottom heat, will now be in flower, and are best placed on the shelves near the light : after flowering, the leaves must be encouraged to grow for a month or two, giving them plenty of water, and placing them in the full light.

Cape Bulbs.—Of this class of plants, a succession should be kept by varying the season of potting ; some should be potted in autumn, and brought forward by a little heat ; others potted early in the spring, will furnish a later bloom ; and if some few can be kept at rest even later still, they will bloom at a subsequent period, and make a pretty variety among other

plants. *Ixia*, *Gladiolus*, and *Oxalis*, are particularly referred to.

Alströmerias.—The roots of these should be potted in rich sandy loam, and most of them require large pots. After potting, give them a little warmth, and water moderately, until they begin to grow pretty freely ; they may then be removed to the green-house.

Temperature.—The temperature should be regulated at about a mean of 42, or 45 degrees, keeping it lower at night ; and ventilation must be attended to as directed at p. 9.

Seeds, and Seedlings.—Any seeds of green-house plants which were not sown last month, and from which plants are intended to be raised during the present season, ought to be sown some time this month ; (for the manner of doing this, refer to p. 8.) Some of those sown last month will probably be growing, and should be transplanted. The same kind of soil should be employed as the seeds were sown in. If the plants are small, four or five may be placed, at regular intervals, round the edge of a three-inch pot ; but if larger, two or three plants will be enough, according to their size. The plants should be returned for a time to the same situations which they occupied previously ; and after they begin to grow a little, and the weather becomes more favourable, they may be gradually made to bear the treatment which is suitable to each respectively.

HEATH-HOUSE.—*Ericas*, &c.—Where the sowing of the seeds of Heaths was not done in the autumn, it may be done early in the present month ; they should be sown in sandy, heath soil, in the manner recommended at pp. 7 & 8. The surface of the soil should be covered with a thin layer of damp roots until the seeds germinate ; and the pots may be stood on a shelf in the green-house, near the glass. As soon as the seedlings are large enough to handle, they should be transplanted into pots of similar soil, placing them an inch or so apart ; there is no better place for them than a cool shelf in the green-house during the spring, and a cool frame where there is plenty of air in the summer.

Potting.—Small plants raised either from cuttings or seeds during the past season, and kept through the winter in small pots, may be repotted towards the end of the month, if they are required to make good progress during the summer. The size of the pots into which they are placed must depend on the circumstances of the case, and the wishes of the possessor : if the object is to grow them as quickly as possible, into something like the magnificent specimens which grace the Metropolitan Exhibitions, they may now be shifted into pots two sizes larger than those they have been kept in ; that is, if they have been kept

in three-inch pots they may be transferred to six-inch ones, using as much as two inches of porous material for drainage, and the soil in as rough a state as it can be worked: if, on the other hand, smaller and more common-place plants only are required, they may be placed in pots one size larger. Good heath soil, as it is termed, is what is principally required for these plants, a little loam may be intermixed. Heath soil is that on which heaths flourish naturally; if it has not a moderate proportion of silver sand mixed through the mass, this must be added at the time of potting. For New Holland plants generally, which are properly grown in the same house, a compost of two parts of this mixture proper for heaths, and one part of loam, is more suitable. The following are a few of the principal plants of this class, requiring this difference of soil:—

HEATH SOIL OR PEAT.	PEAT AND LOAM.
Aphelexis (sandy)	Acacia
Azalea	Adenandra
Blæria	Banksia
Boronia (sandy)	Bossiaea
Chironia	Coleoncina
Chorozeina	Corræa
Dracophyllum	Crocea (sandy)
Epacris	Daviesia
Erica	Dillwynia
Gnidia	Diosma
Gompholobium	Eriostemon
Helichrysum	Eutaxia
Hovea	Grevillea
Leschenaultia	Lasiopetalum
Lysinema	Oxylobium
Mirbelia	Pimelea
Phænoecoma	Podolobium
Sprengelia	Polygala
Styphelia	Platyllobium
Templetonia	Protea ($\frac{2}{3}$ sandy loam)
Thysanotus	Pultenæa (sandy)
Witsenia (sandy)	Thomasia

Training and Pruning.—If the young plants are desired to form close, neat, and compact bushes, they must have all the strongest shoots topped as soon as they grow two inches or so in length; this will cause them to throw out young shoots in all directions. To produce really compact and symmetrical plants, it is highly necessary to be very assiduous in carrying out this point of management throughout the whole of the growing season. Some of the strongest growing kinds may be grown to very interesting specimens, having the form of an elongated narrow cone; this is done by encouraging a leading shoot, and stopping closely in all the lateral twigs; the leading shoot is obtained by pruning the last growth back about a third of its length, which induces young shoots, the strongest upper one of which is continued as the leader, and the rest are cut close in. Plants so treated are very handsome, and very appropriate in situations where every thing is formal; as, for instance,

when placed at regular distances by the side of the pathway in conservatories, or in the summer season by the side of terrace walks.

Azaleas.—The management of these at this period, relates more to the development of the blossoms than to the actual growth of the plant. Some of the specimens should be placed in succession in the forcing-house or stove, in order to keep up a supply of these flowers; it will be enough if one or two plants at a time are removed to the warmer situation. Some of these plants will now be had in bloom up to May: those in flower, require to be very regularly attended with plenty of water.

Boronias and Croceas.—These two very beautiful genera of hard-wooded plants are benefitted by being removed to a cool shelf near the glass in the hot-house, while they are making their young growth during the spring. Some other of the difficult slow-growing, hard-wooded plants, would, no doubt, derive advantage from a similar practice.

Air and Temperature.—All the air should be admitted daily which the state of the weather will permit; but it should be so managed as not to cause drying or chilling draughts. The temperature at night may be from 40 degrees as a maximum, down almost to the freezing point when the weather is dull and wintry. In the day time it may range from 45 degrees to 50 degrees, but sufficient air should be admitted to prevent its rising much above the latter point.

Watering.—If the weather is fine and mild, a slightly increased proportion of water may be allowed, but even now it must not be given before the plants require it; this may be ascertained only by a careful examination of the soil in which each plant is growing; and a little practice and experience will soon render this easily determined. Just enough to keep the soil in a medium state, between wet and dry, is the proportion that should be given, and this ought to be of the same temperature as the house, or a little warmer—by no means colder. If the weather should be dull and damp, very little water will even now be required. It will be seen that the amount of water applied, and the frequency of its application, entirely depend on the existing state of the weather.

GERANIUM-HOUSE. Pelargoniums.—Among these plants there will be a good deal of re-potting required towards the end of the month. A few of those intended for early blooming were potted last month, and the great bulk of the plants will require potting during the present. It should be done by selecting all the strongest plants one week, and then again the strongest of the remainder a week or so later, and so on till they are all done. Besides avoiding that reprehensive practice of potting

a large quantity of plants, simply because the operation is in hand, this plan would also aid the production of the blossoms in succession, as the earliest potted ones would, of course, be forwarder than the others. At this potting, all except young plants intended for late summer flowering, which should get another shift some time hence, should be placed in the pots they are to bloom in, using rich loamy compost, and plenty of drainage. When they are in their full-sized pots, the branches are to be tied down all round, as near to the rim of the pot as they can be pulled without breaking: it is assiduous attention to this tying down or spreading out, that forms the compact, bushy plants which are now so much admired. The plants should not, however, have such a multitude of stakes as we have been much in the habit of seeing. Something neat and secure, made of wire, and painted dull olive green, so as not to be very conspicuous, would be far preferable to stakes.

Temperature, &c.—The plants in this house require more warmth than Ericas, but they should by no means be kept too warm at night. From 35 to 40 degrees at night, and not more than 50 or 53 degrees by day, if the weather is fine and mild, or 45 degrees if it is dull and wintry, will be suitable and sufficient for ordinary purposes. The earliest plants from which the first bloom is expected, (not the forced ones,) should be placed in the warmest part of the house, and where they may get less air than the others, to which latter air is to be admitted with tolerable freedom when the weather is mild. It is best to admit air as early as possible in the day, and to close the house early in the afternoon. If the plants are wanted to be in flower by May, they must get from 55 degrees to 60 degrees by day, with air, and not below 50 degrees at night.

Watering.—See the remarks given under *Heath-house*, which apply here also. Newly potted plants must get (because they require) proportionately less water than those which are well established and rooting freely in their pots. In the case of these plants, which are more than other green-house plants in a growing state, it is very important to use tepid water.

Calceolarias.—These require to be potted about this time, especially all those intended to bloom early in the summer. Like the Pelargoniums, they should be potted at once into their blooming pots, selecting out the strongest to be first operated on, and leaving the weaker ones a short time longer. They require to be set in a light and very airy position, to prevent them from growing spindly and weak; and they should be very cautiously watered at all times, but especially when first potted. A very successful cultivator thus describes his practice:—"About the end of

February I select the strongest plants for a final shift, leaving the weaker ones a little longer, until they show indications of growth, when they may be shifted. The soil I grow them in, consists of equal parts sandy loam and heath mould, and a good quality of white sand, well mixed, but not broken; for I find they like to grow in the rough lumpy mould much better than when it is finely divided. I grow them in eleven-inch pots. After potting I place them in a frame, never allowing them to have the sun from the last time of shifting, but giving plenty of air. I water them very sparingly until they begin to grow, and then sprinkle them every morning with the syringe. I water them once a week (when growing freely) with manure water, and I find they flourish best with manure applied in this way."

Fuchsias.—The old plants which have been kept in a state of rest through the winter, may be brought forward and excited into growth by the application of small quantities of water. Cuttings, taken as soon as the plants have made shoots a few inches long, and rooted in a mild hot-bed, or under a glass in the green-house, and carefully tended, will make beautiful little blooming plants for the summer. The old plants may be potted according to their requirements, when they commence growing, and may be subjected to ordinary green-house treatment.

Fuchsia fulgens.—This plant produces thick fleshy roots, from which young shoots proceed. One-year old plants, when excited into growth about this time of the year, are found to be preferable, both for blooming in pots and for planting out in the flower-garden, to young plants raised from cuttings the same year, which are always more vigorous, but produce less flower. Cuttings should be rooted in the spring, and grown in pots through the summer; and the old roots having been kept through the winter, something in the same way as those of the Dahlia, they may be potted early in this month and placed in heat; when they commence growing they may receive the treatment of green-house plants; and for planting out, require to be hardened off till May, and then they may be planted in the open border as soon as the weather appears settled. Plants thus raised flower earlier, and for out-door purposes are much preferable.

Scarlet Pelargoniums.—Large well-grown plants of the Scarlet Pelargoniums, are exceedingly appropriate objects for removing to the conservatory when in flower, for they are very beautiful. A selection of strong two-year old plants should now be made, choosing those which have the greatest number of stems; and if they had been headed back rather closely in the autumn, it will be an advantage. These

plants should have a tolerably large shift, placing them in twelve-inch pots, in a rich open compost of friable loam, leaf mould, and well-reduced manure, mixed with some lime-rubbish and charcoal. After potting them, place them near the glass, in a temperature of about 60 degrees, where they may remain for about a fortnight, after which they must be taken to the green-house. Among the strong-growing varieties, bearing large heads of flowers, Smith's Emperor, the Shrubland, and Compactum, are good kinds; and of the dwarf-growing smaller kinds, General Tom Thumb, and the old Frogmore, are excellent; the former of these is much inclined to spread.

Cape Pelargoniums.—These, which consist of tuberous-rooted species—at least, we refer now principally to these—are a very beautiful but much-neglected race. Though the flowers are small, and hardly shapeable enough for the florist, yet the colour of many is marked by intense brilliancy, far more so than any we possess among the fancy kinds; and many of them produce blossoms of delightful fragrance. Shake all the old soil from their roots, and re-pot them in compost somewhat lighter than is generally used for Pelargoniums; and then start the plants into growth by an increased degree of heat.

Tropæolums.—When the roots have been kept dry and inactive (as they should be) through the winter, they may now be potted, if not done at the end of last month, using a rich, sandy, loamy soil. The bulbs should be put at once into the blooming-pots, which may be nine-inch ones, if the bulbs are strong, or six-inch ones, if they are smaller. The bulbs should be just buried beneath the soil; and the pots may be set upon a shelf in the green-house till they begin to grow. Those that were started into growth in the autumn, must be well attended to, or the branches will be sure to get into confusion. They should at once be provided with a trellis of some kind, large enough for the branches of each particular kind; and as they grow, they must be constantly and carefully trained over the trellis, so as to cover it, when they have reached their full growth. If propagation is desired, the earlier cuttings are taken off and struck, the better; and they should be kept growing, if possible, throughout the first winter, and the next summer, in order to form strong bulbs: when they are allowed to die off the first season, the bulbs are necessarily very small, and it is often difficult to cause them to vegetate when required.

Cyclamens.—Young plants, raised from seeds sown during last summer, should now be encouraged to grow freely, by being re-potted, in a mixture of equal parts turfy loam, peat, and cow-dung, reduced to mould.

They may be planted in five-inch pots, and set on the front shelves of the house, near the glass. If the object is to induce them to make very rapid growth, they may, after potting, be placed either in a hot-frame, or forcing-house, or stove, if they can be so managed as to get a moderate share of heat only; this can easily be done in a forcing-house, or stove, by setting them in the coolest parts of the house; but, in a hot-bed frame, unless the heat of the bed is very mild, they would be too much excited. After they have made good growth in this elevated temperature, they should be returned to the green-house to mature their growth.

CAMELLIA-HOUSE. Camellias.—Those plants which have been induced to flower early, and whose bloom is now fallen, and being succeeded by the young growth of shoots, should be re-potted, if they require it. Young plants generally require a small annual shift; but when the plants are old and large, it often happens that a fresh pot once in two or three seasons only is necessary. Generally, Camellias are better under-potted than over-potted; for, being of very slow growth, a great mass of soil not supplied with roots in an active state, is very liable to get into a condition which is inimical to the plant, and it, consequently, gets into an unhealthy state. Whether they require potting, or not, they should always be placed in a temperature not lower than from 60 to 65 degrees, to make their annual growth; and they should be retained under these circumstances, until the growth is complete, and just beginning to harden; during this time they require a moist atmosphere, and to be frequently syringed. A vinery is a good place for them.

Rhododendrons.—As these go out of flower, they require treatment similar to the Camellia, except that they do not require so much heat. The young growth should be encouraged as much as possible, as the flowering next season depends on its being perfectly developed, and then well matured during summer.

Temperature, &c.—The ordinary temperature of the Camellia-house may range from 45 to 55 degrees by day, and from 35 to 40 degrees by night. A moderate circulation of air may be allowed; but, as all the plants are nearly in a blooming state, cold currents should be avoided as much as possible. The plants must not be syringed after the buds begin to burst, as the wet would damage the flowers; but some moisture may be allowed, by wetting the floors in the day-time.

Watering.—At this stage of growth, the plants require very constant and somewhat liberal waterings; indeed, from the time they begin to increase in size, it is absolutely necessary that the plants never want water, for

this would cause the flower-buds to drop off without expanding; of course, it is not intended that the soil is to be kept saturated with wet: this is the opposite extreme from want, or too limited a supply.

THE PLANT STOVE.

OWING to the greater degree of heat which is kept up here, the plants will naturally be more inclined to commence growing than those in the green-house; but, except in the case of those which are required to grow or bloom at some particular period, before the natural season, this disposition must be repressed, by avoiding more heat than is absolutely necessary, by admitting as much air as is consistent with the health of the plants, and limiting the supply of moisture, both in the atmosphere and at the roots. This applies more fully to the woody plants than to herbaceous ones.

Temperature, &c.—In dull weather, the temperature recommended at p. 10 will be quite sufficient; but if the weather is fine, clear, and sunny, two or three degrees more may be allowed. Still keep the temperature at night lower than by day. Air must be admitted here chiefly to regulate the temperature. Avoid currents, or draughts of air, at any time, except when it is very soft and mild, which is not the case at this time of year.

Woody plants.—The greater part of the shrubby stove plants are better kept at rest till the next month, unless the weather is very favourable indeed for growth; in which case they may be potted, if requisite, towards the end of the present month, and set to grow, by being placed on, or plunged, where they will receive a very mild degree of bottom heat. Such plants as *Ixoras* require treatment of this kind.

Herbaceous plants.—The different kinds of suffruticose, herbaceous, and tuberous-rooted plants, such as *Achimenes*, *Gloxinia*, *Gesnera*, *Niphaea*, *Justicia*, *Eranthemum*, &c., may all be potted, according as they may require it, and excited slowly into growth. The plants of *Achimenes*, *Gloxinia*, &c., which were started during last month, will require shifting into larger pots, and should be placed into those they are to flower in: perform the operation carefully, so as not to injure the young roots. The *Achimenes* look exceedingly pretty, when grown in baskets, and suspended above the height of an ordinary individual; they droop down on all sides, and have a very good effect.

Centradenia.—The neat little *Centradenia rosea*, if placed on a warm light shelf, will bloom by the middle of January. Cuttings, struck early in February, and highly culti-

vated, will be bushy plants by the end of June, at which time they should be in five-inch pots, and should be removed from the stove to a light and airy green-house shelf. They must not be shifted after this, but allowed to become rather "pot-bound," and will require only moderate waterings, until the end of September, when a few may be introduced to a stove, or intermediate house, where a temperature of 65 to 70 degrees, by day, can be given. The rest may follow successively; and it is worthy of particular remark, that they do not open well without the influence of considerable light; all forcing them without this, is vain. They grow freely in equal parts loam, sandy heath soil, and vegetable earth, with sand and charcoal.

Jacarandas.—These, and many other woody stove plants, are considered difficult to flower. A mode, which is often successful, is to take off the head of an old plant, as a cutting, some time during the summer, and about this season of the year start the young plants so raised on bottom heat, in a moist atmosphere; such plants often flower, and make pretty dwarf specimens.

Aphelandras, &c.—Young plants of these, and also of *Poinsettias*, and *Euphorbia fulgens*, raised from single eyes, or short cuttings, about the end of this month, and kept growing in a cool part of the stove all the summer, near the glass, will make nice dwarf flowering plants by winter. The cuttings are to be rooted in moist heat. Many of the *Justicias*, *Eranthemum pulchellum*, and some of the *Begonias*, may be similarly treated; and all these will be found exceedingly ornamental in the winter months. *Eranthemum pulchellum* has fine blue flowers; those of *Justicia flavicomis*, or *calytricha*, are yellow; *Begonia Martiana* is deep rose pink; and the *Euphorbia fulgens*, *Poinsettia pulcherrima*, and *Aphelandra cristata*, and *aurantiaca*, are of various shades of red and scarlet. There is a variety of the *Poinsettia*, in which the bracts are white: here alone are materials enough for no mean display in the winter months.

Neriums.—Of the *Neriums*, or *Oleanders*, there are many very handsome varieties, of which the single white, the double red, (splendens,) and a camellia-striped one, called *Rayanot*, are the most striking. Cuttings of the upper shoots, rooted in autumn, if brought into the stove now, and encouraged to grow, will produce large bunches of bloom, and are admirably suited to decorate the conservatory, or drawing-room. The cuttings root freely if their lower ends are placed in a phial of water, set in a light place.

Luculias.—Some persons find difficulty in growing these, whilst others speak of their culture as though it were a very easy matter:

the truth is, they may be made to grow to perfection, with a certain degree of attention, but this degree of attention they require. To commence with small plants raised from cuttings last year, which are required to be grown into a fine specimen, something like the subjoined treatment should be given:—About the end of February, place the plants in a forcing-house, where they will receive a moderate degree of bottom heat; when they begin to grow, which may, perhaps, be in about three weeks, shift them into pots several sizes larger, (as, for instance, from a three-inch to an eight-inch one,) using a compost of “four parts turfy loam, two parts turfy peat, two parts half decomposed leaf-mould, one part charcoal, broken into lumps about half an inch in diameter, to which the dust of the charcoal, clean white sand, and broken freestone, should be added, sufficient to render the whole thoroughly porous.” This should be used as rough as possible, and the pots must be well drained. After potting, they are to be plunged half the depth of the pots in a mild bottom heat, and where they will enjoy a warm and moist atmosphere, and a heat of from 60 to 80 degrees; the latter by sun-heat. With due care and attention, these plants will have made a strong shoot, some inches long, by the middle of April, and their treatment we shall then take occasion to notice further. Old plants, placed in a mild stove temperature, will soon throw out young shoots, some of which should be taken off with a heel, (see the cut,) and inserted firmly in well-drained pots of rather sandy soil, surfaced with an inch or so of clean white sand. The pots should be covered by a glass, and half plunged on a brisk (but not too powerful) bottom heat; after a fortnight or so, the pots may be plunged to their full depth, and in about three weeks longer, they will be rooted, and fit for potting. The manner in which the cuttings should be inserted, will be understood from the annexed sketch. The small inner pot may be kept filled with water, or not, as may be found necessary; the hole at bottom being stopped with clay. When they are rooted and potted separately, these plants should be treated similarly to the others alluded to already. When cuttings enough are obtained, the old plants may be cut in close, and then gradually excited. These old plants have a finer appearance, in consequence of producing a greater number of flower-heads, but the individual heads are smaller.



Ixoras.—Young plants, struck about the month of July, and re-potted now, and plunged in a mild bottom heat, with a temperature of from 60 to 70 degrees, will make nice blooming plants in the summer.

Gardenias.—These should be treated the same as *Ixoras*. The old plants should always be started in a frame, where there is a strong moist heat. The powerful and delicious fragrance of these plants is admired by every one.

Cacti.—Old plants, that were starved last season, should now be made to commence growing in good earnest through the present summer, to flower in splendid style during next winter and spring, or later, if kept back.

Hedychiums, Marantas, Caladiums, &c.—Kept dry during winter, should be gently excited by applying heat and moisture.

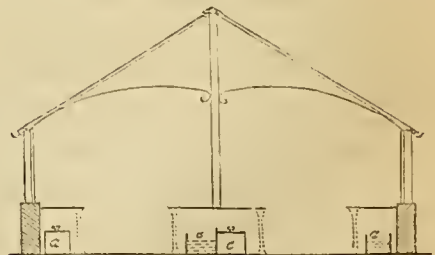
Amaryllis.—Of this, and the allied genera, the bulbs should be potted, and the plants grown vigorously in strong heat and light, through the season; and they will flower splendidly next year.

Brugmansias.—The fine old plant, formerly known as *Datura arborea*, (now *Brugmansia candida*), as well as *B. sanguinea*, and one or two other kinds, should be raised from cuttings of single eyes, planted in moist heat, in light rich loam: they make nice blooming plants by autumn.

Palms.—It is not every collection that can boast of palms, but where there is a stove in which any room can be afforded, some of these noble vegetables should find a place. There are kinds of many different forms, and attaining very different sizes, so that in this respect a few that would suit any sized house could be selected. They require a strong moist loam, and should be frequently washed with the engine.

ORCHIDACEOUS-HOUSE.

THE annexed engraving represents a structure which is both economical in its erection,



and very suitable for the growth of these plants. It may be made of any length,

according to the collection intended to be cultivated. The stages, or benches, for the plants should be of slate, resting upon neat iron columns at intervals; and underneath the stages, hot-water tanks for heating (*a*) should be constructed: these tanks should be furnished with movable covers, so as to exclude or admit steam at pleasure. The roof is supported by a row of iron columns in the centre; along the roof sashes, some slight iron rods are fixed, and by means of moveable hooks of different lengths, those plants which require suspending, are fixed so as to be brought to the position best suited for inspecting them. The pathway may be of stone; or gravel is better, if furnished with an open wooden platform to walk on. If it is preferred, the central stage may have a portion more elevated, for the purpose of displaying the plants; but this is usually done by setting them, if necessary, on an inverted pot, of sufficient height to elevate them as much as may be necessary, and this is more convenient than having any portion permanently raised. In the sketch some of the tanks or gutters are shown with the covers on, and others with them removed, but they are all made in the same way, and may be kept on or taken off at pleasure. The pillars and supports to the roof may be decorated by climbing plants, of which some of the *Passifloras*, *Thunbergias*, and *Ipomœas*, are particularly appropriate.

Atmosphere.—When the whole collection is grown in one house, a mean temperature of from 63 to 68 degs. must be kept up; but where there are two houses, the warmest may be kept at 70 degs. and the coolest at 60 degs., allowing four or five degrees more in very fine weather, and a few degrees less if it is dull and cloudy. At night it should always be from six to eight degrees lower than by day. The moisture of the air must be proportioned to the heat, but an increase of temperature should always at this season be accompanied by more moisture. Very little, if any, air need be admitted.

Potting and renewing the soil.—When the plants indicate signs of growth, towards the end of the month, they are to be re-potted, or, if in baskets or on blocks, the materials about the roots should be examined, or renewed, if necessary. Previously to being potted, the plants should not receive any water for some days. On the subject of potting, Mr. Lyons remarks: "Probably the most material point to be attended to in potting, is, *that the pots should be well drained*. This may be effected by filling the pots two-thirds with potsherds or charcoal; or by inverting a smaller pot inside, and filling it round with cinders or charcoal. This I consider best, as being the lightest. A perfect system of drainage is *absolutely necessary*,

for, although most—I may say all the species—delight in great moisture at certain periods of the year, still they will not thrive if the water

is suffered to remain or become stagnant about their roots; it must therefore have a free passage to run off through the pots. In potting, the plant must not be placed deep in the pots; it should be kept above the rim, and on the surface of the material on which it is to



grow. It may either be tied to a stick made fast in the pots, or fastened down with pegs, to prevent its falling or being easily disturbed: place the pieces of turfy peat so that the roots may easily run through them, and in a short time the plant will be firm, as it throws out its roots very quickly." Somewhat shallow and wide pots are most suitable for orchidaceous plants. Some only of these plants are

properly grown in pots, others require to be placed in loose, open baskets, or on blocks or billets of wood. The baskets may be of any form which the fancy of the owner may suggest; that here represented is an elegant and useful form.

The manner of placing the plants in the baskets is similar to that of potting them, except that so many potsherds are not required; neither is there any necessity to elevate the plants so much, though in this case the base of the stem is not to be placed *beneath* the surface. The blocks or billets, to which some species require to be attached,



may be of any form, and should be adapted in size to the strength and size of the plants, or the particular nature of the kind. Blocks of any hard wood, charred, are very suitable for the purpose; and many cultivators esteem blocks of the wood of the cork-



tree, with the bark attached. A pair of coconut husks, loosely fastened together, make a convenient receptacle for some kinds; and some of the bivalve shells look very handsome when so used. When the plants are placed on the blocks, they should have a little *sphagnum* moss, cut moderately fine, laid beneath them, and some more added to cover the roots; the moss and plants are then to be secured to the block, by means of zinc or lead wire, fastened to copper tacks, driven into the blocks. Different kinds of soil are preferred for the plants in pots and in baskets, by different growers; and it may at once be observed that any of

them are suitable. Thus, some prefer the upper sods from a turf-bog, mixed with pieces of broken charcoal; others prefer sphagnum mixed with potsherds; others, again, give preference to a mixture of sphagnum, chopped small, rotten willow or poplar wood, in small lumps, and the under stratum of sphagnum, which has almost become peat. The large lumps of the roots of some of the larger ferns are very suitable to attach the plants to; and they flourish well on them. Whether in pots, baskets, blocks, or growing in any other way, it is an advantage to the root, as well as to the appearance of the plant, to cover the soil with some small creeping plants, which afford shade to the roots, and have a lively appearance: the little *Lycopodium denticulatum*, and some other of the small species—all having very small leaves—are suitable for this purpose; and so is the little native plant, *Hydrocotyle vulgaris*, with small round leaves and creeping stems. When the plants in baskets or on blocks do not require to be shifted, the moss or turf about their roots should be renewed, and the roots should be made comfortable before the plants have made much growth. The following list of the principal genera, showing which require pots, baskets, or blocks of wood, will be useful:—

Acanthophippium; pots (not elevated).
Acineta; pots and baskets.
Aeropera; baskets.
Aerides; baskets and blocks.
Angræcum; pots or baskets.
Anguloa; pots.
Anæctochilus; pots.
Barberia; baskets or blocks.
Bletia; pots (not elevated).
Brassavola; pots and baskets.
Brassia; baskets.
Broughtonia; blocks.
Burlingtonia; blocks.
Calanthe; pots (not elevated).
Camarotis; blocks.
Catasetum; pots or blocks.
Cattleya; pots or blocks.
Cirrheæ; pots.
Cælogyne; baskets and blocks.
Comparettia; blocks.
Coryanthes; pots or baskets.
Cynoches; pots or blocks.
Cymbidium; pots or baskets.
Cypripedium; pots (not elevated).
Cyrtochilum; pots and blocks.
Cyrtopodium; pots.
Dendrobium; pots, baskets and blocks.
Epidendrum; pots and blocks.
Eria; baskets or blocks.
Galeandra; pots (not elevated).
Gongora; baskets.
Houllettia; pots.
Huntleya; blocks.

Lælia; baskets and blocks.
Leptotes; pots.
Lycaste; pots.
Maxillaria; pots.
Miltonia; pots or blocks.
Mormodes; pots or blocks.
Odontoglossum; pots or blocks.
Oncidium; pots, blocks, and baskets.
Ornithidium; blocks.
Paphinia; pots.
Paxtonia; pots.
Peristeria; pots and baskets.
Phaius; pots (not elevated).
Phalænopsis; rough blocks.
Promenæa; pots.
Renanthera; large blocks, or trunks.
Rodriguezia; pots or blocks.
Saccolabium; blocks or baskets.
Sarcanthus; pots or blocks.
Schomburgkia; blocks.
Scuticaria; blocks.
Sobralia; pots (not elevated).
Sophronitis; blocks (small).
Stanhopea; baskets or pots.
Stenorhynchus; pots (not elevated).
Trichopilia; pots.
Trichosma; decaying blocks.
Vanda; rough blocks, or baskets.
Warrea; pots.
Zygopetalum; pots.

Syringing.—When the plants are making their growth, they require syringing occasionally (perhaps once or twice a-day), in addition to the moisture of the atmosphere: this operation is not to be performed with a force sufficient to upset the pots, but like a plentiful, gentle shower of rain.

Gongoras, Stanhopeas, &c.—Some of the large plants of them which may be starting to grow, may be steeped in tepid water till they are thoroughly soaked: unless this is done, it will be difficult to get the old soil thoroughly moistened. The same will apply to other plants which have been kept very dry.

Phaius.—These plants, as soon as they begin growing, require re-potting into equal parts of sandy loam, peat, and river sand, and to be plunged in a brisk heat, till they have made their growth. *Calanthes* require similar treatment.

Dendrobiums.—Many of the most showy of them will now be in flower, and will be available for decorating the conservatory or drawing-room. Keep them from currents of cold air; and do not give them cold water.

Plants in Flower.—Some of the kinds blooming at this season, besides several beautiful *Dendrobiums*, are the *Phalænopsis amabilis*; *Cyrtochilum maculatum*; *Zygopetalum crinitum*; *Oncidium longifolium*; *O. leucochilum*; *O. Cavendishianum*; *Cælogyne flaccida*;

Lycaste cruenta; *Huntleya violacea*; *Brassavola glauca*; and *Odontoglossum pulchellum*.

FORCING-HOUSE FOR FLOWERS.

The temperature of the house must not be raised too suddenly during this month, care being taken, by giving air, to prevent too great an excess should the weather be bright, whilst at night it may be allowed, to fall as low as 50 degs., or even lower, without risk of any material damage to the plants. Of course rapid transitions are to be carefully avoided, although a considerable difference between the highest range by day, and the lowest by night, is found to be more beneficial than otherwise; but the fluctuation should be gradual.

Watering.—The direct application of water to the roots, and of vapour to the stems and leaves of the plants, must be carefully attended to. The earth in the pots, and the atmosphere around the plants, must never be suffered to become dry; at the same time, success materially depends on the other extreme being avoided; although it must be recollected that plants in so artificial a situation generally require a larger supply of water than when growing under ordinary circumstances. Most bulbs, when in a growing state, require a large supply of water; they therefore do well if their pots are set in pans, the pans being now and then filled with water; taking care that the plants use up all that previously supplied ere they be again replenished.

Insects.—The house should be fumigated at least twice during the month, and no hesitation should be felt at doing it oftener, if the green-fly is troublesome enough to require it. Little trouble need be yet taken about the red spider, if the house be kept to the moist genial temperature recommended; but if they make their appearance, wash the pipes or flues with whitewash, in which a little flowers of sulphur, or sulphur vivum, has been mixed. Attend particularly to the Rose-buds, and remove every sign of a grub; also, watch the leaves, and if any whitish irregular marks appear on them, examine closer, and a very minute grub will probably be seen at the largest end of the mark, destroying the cellular substance of the leaf, between the upper and under skins. By timely attention in picking out, or otherwise destroying the grub, the leaf may be preserved; but if this be not done, the leaf is soon so much disfigured as to render it necessary to remove it. Slugs, snails, wood-lice, and all other sorts of intruders, must be carefully removed as soon as their presence is detected.

Roses.—In the beginning of the month introduce another batch of these plants, they

will follow those brought in last month, and will flower in April. Remove those sufficiently advanced to a cooler house.

American plants.—Keep up a succession of these by fresh introductions, as those previously brought in are removed. They may be placed in the most airy part of the house, and must be carefully attended with water, or both their flowers and leaves will drop.

Lilacs, Duetzia, Ribes sanguineum, and plants of similar habits, may also be brought in as vacancies occur. They will be found very useful where many plants in flower are wanted. Indeed, where great quantities are required, every early flowering shrub is easily forced; such as the varieties of the common Hawthorn, Laburnum, Pyrus, Spiræa, Guelder Rose, and many others.

Hydrangeas may be introduced. Thin out the branches, leaving only about four according to the strength of the plants. They should be set in pans, and supplied with an abundance of water.

Violets, in pots, may also be introduced, being placed in the coolest part of the house, and near the glass. Any of the varieties may be used, but the Neapolitan is generally preferred. The temperature should not range above 55 degs. where they are placed, or they are very likely not to expand their flowers.

Tuberose.—These, if it be not already done, should be potted in rich sandy loam, in six-inch pots. They should be very sparingly supplied with water, until they have pushed vigorously, when the supply should be liberal, and all care should be taken, by placing them near the glass, to keep them as dwarf as possible: their great height, under the most favourable growth, being the great defect in this plant.

Cacti.—Introduce a fresh supply of these showy plants during the month, including now *Cereus speciosissimus*. When once fairly started these plants like a liberal supply of water.

Achimenes.—These plants, and their allies the *Gesneras*, &c., should be placed near the glass, in the hottest part of the house, and receive all the encouragement in watering, &c. consistent with their progress.

Hyacinths, Tulips, &c.—A regular succession of bulbs of this description should be maintained, as those previously introduced are removed. By the end of the month, however, they will be found to advance fast enough into flower in a pit or green-house; and therefore the number brought into the forcing-house may be reduced.

Lily of the Valley.—Maintain a good supply by introducing the best established plants, exciting them very gradually.

Pinks and Carnations.—These are generally wanted in considerable quantities, there-

fore the supply should be constantly attended to. They must not be forced on too rapidly, or the buds are very likely to come *blind*, as it is termed; that is, they die off in a small state.

After-treatment of forced plants.—As soon as forced plants are out of flower, a proper situation should be selected in which to place them. At this time of the year, a house, or pit, kept at a temperature near that in which they have been forced, should be set apart for them; in which they should be attended to regularly with water, and carefully looked over, to see that they are not damaged by insects or otherwise. If this course be pursued, some hope may be entertained of their being fit to force again the following season; but if they be turned out into back sheds, or under north walls, as is too often the case, death or decrepitude are the certain results. In attending to the plants here, it is advisable to keep each sort separate; as, for instance, the roses, where forced in large quantities, should have pits exclusively devoted to them, where they may ripen their wood, and, in many instances, they will flower again during the summer. Again, the bulbs should have a shallow pit appropriated to themselves, where, by means of a good heat and a copious supply of water, they may be enabled to perfect their foliage, and strengthen their bulbs for the next season. This treatment is peculiarly adapted to Amaryllis, Nerine, and all the beautiful tribes of bulbs from the Cape of Good Hope, and a pit devoted to their growth would amply compensate the amateur for his trouble.

PITS AND FRAMES.

Annuals.—A few seeds of each of the principal sorts of tender annuals, for blooming in pots in the green-house, should be sown during this month. These are such as Balsams, Browallias, Thunbergias, Cockcombs, Globe-amaranths, Tricolors, &c.; a few seeds of Schizanthus and Mignonette, to succeed that sown in autumn; or, in fact, any thing of this class, which may be particularly admired, may be added. Unless there is ample accommodation in the stove or forcing-house, a hot-bed frame is the best place to sow them in, and also to keep the plants afterwards for a time. The half-hardy kinds must not be kept too long in a hot, confined atmosphere; they must be planted in rich, light soil.

Dahlia.—Some of the most valuable kinds may be put into a mild hot-bed, for the purpose of exciting the buds; and as soon as the shoots are grown two or three inches long, they should be taken off, and planted singly in two-inch pots, and again placed in the hot-bed. After they are rooted, they must be put into

larger pots, and gradually hardened. It is too early to start the general collection. The beautiful blue *Salvia patens* may be propagated in a similar way.

Lobelia.—These fine plants are much neglected. The old plants, which should be preserved in winter in a cool, dryish place, should, towards the end of the month, be parted, each little heart, or crown of leaves, being detached, with a portion of the fibrous roots, and potted singly into three-inch pots; these are to be plunged in a mild hot-bed frame till they begin to grow pretty freely, and must then be taken out and re-potted, and hardened off. If bloomed in pots, they may be ultimately placed in pots a foot or more in diameter, using very rich loam, and giving them plenty of moisture. For planting out into the borders, they may be shifted once, and kept in the cold frames till May.

Half-hardy plants.—The different kinds of summer flowering plants intended for the decoration of the flower-garden, or parterre, must now meet with attention. The strongest of those which have been kept through the winter in small pots, and which are required to be early in flower, should be re-potted into three-inch or five-inch pots, and after they begin to grow a little, they would be benefited by being placed where the roots will get a very slight degree of heat, while the tops receive all the air which the state of the weather will permit. Those which have been kept in store pots, just as they were planted as cuttings, or potted a few together in a moderate-sized pot, should be potted singly into small pots, and if they can be accommodated with a little warmth, it will be an advantage. If the stock of any of the kinds is not sufficient for the purposes required, one or two old plants of the particular kind should be set in a cool part of the forcing-house; and they will produce young shoots, which are to be taken off as cuttings, and struck in a hot-bed, potted off as soon as rooted, and gradually brought to bear the temperature of a cold frame. *Calceolarias*, *Salvias*, *Verbenas*, *Petunias*, *Fuchsias*, &c., may be so treated.

Ten-week Stocks.—A few of these, to flower early in the flower-garden—and early flowers are doubly valuable—should be sown on a hot-bed, and treated as half-hardy annuals. A few of other favourite kinds of annuals for the borders may also be sown, especially plants of decided colours for geometrical gardens.

Alpines.—Towards the latter end of the month, the pots of alpine plants in the cold frames may be taken out of the material in which they had been plunged. If they are allowed to remain plunged after the roots commence growing, many of the kinds are apt to spread among the plunging material, and

the plants, by this means, acquire an undue degree of vigour.

WINDOW GARDENING.

BUT little progress can be made yet, if there is no other convenience than the window. Old favourite plants of Geranium, Calceolaria, Myrtle, and such plants, which are kept in the window, will require to be set outside, whenever the weather is mild, and must be kept within at night, and in frosty or very boisterous weather: give them only very moderate supplies of water—as much as will keep them from shrivelling. Camellias may stand inside in a light place, and must have rather more water. Fuchsias, which will be leafless yet, may, towards the end of the month, get more water, and will soon begin to bud out. Put them outside whenever the weather is at all favourable, so that they do not grow too fast. A few pots of annuals sown in autumn, including Mignonette, may, perhaps, be had in bloom; but this will depend a good deal on the conveniences: if there is a frame or pit to serve as a reserve and store place, they may be had in tolerable condition, if frost is kept out; but a living room is not a good place for plants to make much growth in; it is always too dry and close. All the plants kept in window require as much light as can be admitted to them. Plants in Wardian cases require to be set in a light place, and if the weather is frosty, the frost must be prevented from getting to them. Bulbs in glasses should have the water changed; and those growing in pots should be kept moderately watered: they want as much light as they can get. A few annuals of the best, or any favourite kinds, may be sown; they will be certainly useful when they come to flower. If a constant display of flowers is an object, it can only be kept up by means of a small forcing-house; and, in that case, a selection must be made of the smaller kinds of plants referred to from time to time, under the head *Forcing-house for Flowers*. On a smaller scale, and when the convenience of a forcing-house cannot be afforded, the best course is to make an occasional selection from the plants offered for sale in the flower-market. When plants of this kind are purchased, the way to keep them in perfection, as long as their blooms naturally last, (which, for want of due attention, is frequently not realized,) is to keep them in a light place, to supply them with water just enough to keep the soil moist, and to avoid confining them too closely, or for too long a period.

THE ROSE GARDEN.

Grafting.—Preparations may now be made for grafting; for this purpose seek your intended grafts, which should be well-ripened

wood, of last year's growth, and the thicker the better, though, if you are going to do any great number, you will be glad to use up all you can get, and the thin ends as well as the thick. It is necessary to leave the wood on the tree as long as you can; and if you are obliged to cut it off you must put them into the ground, the larger ends downwards, to prevent them from shrivelling. Select and mark the best stocks for your purpose, that is, among the out-of-door stocks, and, having deposited your cuttings in a shady place, await the next month for the operations.

Protection.—Standard or dwarf Roses which require protection, ought usually to be sheltered in the autumn, but the mild weather of the present winter has not yet rendered it necessary; where there is any risk it had better be attended to now, for we may get severe weather yet. One method is to dig up the plants, and put them in by the heads, in a sheltered place, when, if necessary, you could cover them with a load of straw. The advantage of this lifting up is, that you can have them all in one spot; and that, perhaps, in an outhouse or under a roof, or, at any rate, where the wind will not disturb them. They will take no harm till the spring, when they may be planted out again; another mode is to get a quantity of moss, or, for want of it, short hay, to put among the branches, and lie all as close together as you can, when mats can be put over or round the heads, and be tied on. Many people put hay-bands round the stems, when these stems are briars, although scarcely any frost will ever damage a brier: this, therefore, may be spared as useless; but if the stock be the Boursault, or any other vigorously growing Rose, it will be necessary, for they will not bear so severe a frost as the brier. A third mode of protecting against any ordinary frost, is to merely throw a mat over the top, and lay it in under the head, which is thus merely put in a bag or cap; but this will not stand so much frost as if under either of the other modes of protection. It must not, however, be presumed that Roses, in general, require any covering or protection; nine out of ten do not, and this includes all the summer Roses, as they are called, but we may say all the rough-wooded ones: it is only some of the smooth-wooded kinds that are, in general, found tender; and this comprises some of the Noisettes, Thes, China, and Hybrid varieties. If there are beds of dwarf Roses laying well together, nothing is necessary but to pack moss between them; or, unless the frost be beyond all calculation severe, a good covering of peashalm, (which is, unquestionably, the best litter), or broken straws, will carry them well through a pretty hard frost.

China and potted Roses, in general, must be kept free from dead leaves, and occasionally watered. Roses in the forcing-house, and growing well, must be liberally watered, and the heat brought up to about 60° or 70° in the day, and not below 50° at night.

Insects.—Examine all Roses under glass, to see that they are free from green-fly. If they are not, let them be fumigated with tobacco-smoke, in a pit or house closed up; this is the most effectual mode of clearing them, because they are killed; and a syringing with clean water, will wash everything off. If you are so circumstanced, that you cannot give them a house or pit, and therefore cannot fumigate them, syringe with tobacco-water, and afterwards with clean water, using a very fine rose, that more force may be applied without damaging the plants than could be if the rose of the syringe was not fine.

Plants in pots which are not growing should be in cold pits, and all very hardy varieties, in pots, should be plunged in the open ground, unless these are wanted earlier than their season. Those who have begun forcing, and require a succession of flowers, should take more into the forcing-house, or rather into the green-house preparatory to it, for they rarely succeed well if taken from the cold to the heat at once. The heat must be brought to the plant gradually, or it cannot be expected to flower freely.

Stocks.—The ground must be well-trodden round the roots of stocks recently planted, unless they have been so secured as to be unaffected by wind; but no persons, who desire to make the best of their stocks, will have them unstaked. Stocks may still be obtained and planted as directed last month. In other respects, also, look well to anything there recommended, and do what can still be done.

THE FLOWER-GARDEN.

Anemones for late blooming, should be planted this month in beds in the same manner as *Ranunculus*. Plant also in borders.

*Annuals.**—Sow in the open borders a few of the most hardy kinds, and in very severe weather protect them. An inverted flower-pot answers this purpose; but in mild, open weather, and daily after the seeds germinate, it must be removed.

Auriculas.—Top dress with rich compost; remove the soil as far down the pot as can be done without disturbing the roots, and fill up with new soil; water sparingly, and protect from frost.

Berberis Aquifolium.—This beautiful flowering evergreen shrub throws up an

amazing number of suckers from the roots. The best established of them may now be removed. Seeds may also be sown.

Box-edgings should be planted and repaired, gravel walks formed, and all contemplated alterations completed. No work of the kind should be delayed beyond the present month.

Bulbous-rooted plants.—Any not already planted should be got in immediately, although success is very doubtful, when planting is so much delayed.

Cedrus Deodara,† and all the *Pinus* tribe may be planted or removed. In purchasing these, be very careful to secure those which have not been raised in heat.

Carnations and Picotees.—Keep these very clean, moderately dry, and give plenty of air. Prepare compost for the final potting; loam and cow-dung, in equal quantities, mixed well together in a heap, and turned once a week, answers as well as anything. Look very carefully for, and destroy the wire-worm and grub.

Crocuses, Scillas, Snowdrops, &c.—The soil about these should be carefully forked, and the beds put in order before the flowers appear, or they get damaged in the operation. Attention to this, and their culture generally, materially enhances their beauty; although they exist under almost any mode of treatment.

Cytisus, Cratægus, Holly, &c.—Seeds of all these should be sown this month. Almost any situation not too much exposed to the sun will suit them.

Cyclamens in open borders, require attention; the earth should be stirred about them, and those in flower slightly protected, so as to preserve them as long as possible: flowers at this part of the year are valuable.

Dahlias.—Sow seeds of these on a hot-bed, for obtaining new varieties; and plant in heat any old roots that it is wished to propagate.

Double Primroses require the same treatment as *Polyanthus*. The double crimson, and double white, as well as the double lilac, are very handsome, and exceeding useful if placed in pots in the cold frame. The established plants in the border may be removed if required, or top-dressed, as recommended for *Polyanthus*.

Erysimum, Nemophila, Collinsia, Clarkia, &c., may be sown in open borders, and, if slightly protected, will flower early in June.

Grafts.—Cuttings of the various species of *Cratægus*, taken off at this season, and stuck in damp soil till grafting time, are said to unite better with the stocks than grafts newly cut.

Gentianas, Dianthus, Corydalis, Phloxes, and perennials of all kinds intended for re-

* For a list of the newest and most beautiful Annuals, with their height, time of flowering, and colour of bloom, and culture, see Part IV. of the *Horticultural Magazine*, or p. 169 of the *Annals of Horticulture*.

† For cultivation of the *Cedrus Deodara*, see Part 111. of the *Horticultural Magazine*, or p. 127 of the *Annals of Horticulture*.

moval, should now be planted where they are to flower.

Hepaticas.—These flower early, and require a strong rich mould. Fork the earth about them, and add well-rotted manure. The roots may also be separated, and transplanted; but when removed the ground should be *well* dug and manured: they do better when not often transplanted. All the kinds, both single and double, are exceedingly pretty. The double pink flower earliest; double and single blue flower later, and require more care. The double blue is rather scarce.

Hyacinth beds.—Stir the earth between these plants as soon as they are up, so as to give air to the roots. Protect them with long *light* litter, removing it when the weather will permit.

Jasmines, Honeysuckles, &c.—Cuttings of these, and other hardy shrubs, may be planted in any vacant space, and, when well rooted, removed to the situations required.

Ledums.—When any of these become unsightly in the peat borders, they may be removed to any spare corner, and layers made from the younger shoots: by following up this plan, young shrubs are always ready to supply the places of old and decayed ones.

Neapolitan and Sweet Violets.—Fork between them when dry. They may also be separated, and removed if required.

Pansies.—These beds must be protected in severe weather by long litter. Stir between the plants, and top-dress with decayed cow-dung, or leaf-mould. Those in pots must be shifted into larger ones, or planted out in beds.

Peonias.—There are now many beautiful varieties of these, which make a splendid show in the summer months; where there is space, therefore, some of them should be planted this month.

Plants in pots generally, kept in frames and in green-houses for protection, must be watered very sparingly; and, in all open mild weather, have as much air as possible.

Planting and transplanting, generally, of all trees and shrubs, should be completed this month. Suckers and rooted layers may be removed and planted, but the former are seldom desirable.

Polyanthus.—These grow better in well-drained beds and borders, than in pots. The surface round them should be stirred and top-dressed, carefully clearing away all dead leaves, and examining diligently for slugs, which damage these plants more than anything.

Polyanthus seed.—Sow in pans, and put them in a cold frame; keep them very gently, but very regularly watered; as, if they are allowed to become thoroughly dry, there is little hope of success.

Pruning trees and shrubs should be completed this month. Be careful to shorten, or cut away any branches likely to interfere with the leading shoot; in fact, in all cases where one shoot is materially stronger than all the others, except when intended for a leader, it should be shortened.

Ranunculuses for the June shows must be planted this month, in well-drained beds, composed of half good loam and half decomposed cow-dung, well mixed. Level the beds, draw drills three inches deep, and six inches apart, and press the tubers gently into the earth at the bottom of the drill, and cover them an inch and a half above the crown with mould.

Tagetes tenuifolia.—This new hardy annual is one of the most useful yellow flowers we have for bedding out, being a continued mass of bloom, from June till cut off by the frost. Sow seeds in heat, if plants are wanted for planting out in a forward state; the latter end of next month will be soon enough to sow in the open border.

Tender and half-hardy annuals generally may be sown on heat for planting in beds and borders at the usual season. Those separately noticed attend to as directed.

Ten-neck Stocks, China-Asters, Mignonne, &c.—Sow seeds in pots, and place in heat, to forward for planting out early. Sow a few in the open border, and protect with hand-glass.

Turf.—Lay turf wherever required, and, in doing so, be careful the ground is made perfectly level and firm, and that no spaces are left between the turfs.

Tulips.—Give all the air possible without risking the frost. Hoops, with waterproof transparent cloths, are the best coverings.

Verbenas, Salvias, Petunias, &c.—Cuttings of these, and other half-hardy plants, may now be struck in heat, and brought forward for transplanting into beds and borders in May.

Wallflowers, Rockets, Campanulas, &c. may be removed and planted out where they are to bloom. The earlier this is done the better, if the weather be open.

KITCHEN GARDEN.

Cabbage.—Plant out in vacant spaces the strongest from the seed bed, twice as thick as required, the half of which may be pulled for Coleworts again.

Carrots, Parsnips, Beet-Root, &c.—Sow, in favourable weather, a few seeds of all, or any of those that you require.

Cauliflowers.—Sow a few under glass, and protect plants as last month. Hand-glasses should be tilted or taken off in mild weather.

Celery.—Earth up on dry days, and be very careful the soil is well broken. Seed may also be sown in a frame.

Beans.—Sow a few early beans in drills three feet apart, and the beans three inches apart in the drill. The end of this month, or beginning of next, is the season for main crops.

Herbs.—Sow all that are raised from seed in any spare places you have; but regular beds are preferable.

Horse-radish.—If no provision was made in autumn for this useful root, a bed should now be planted. Dig a trench, eighteen inches deep; throw in a little good rotten dung, and some of the soil, to the depth of three inches; then cut roots of the Horse-radish into pieces an inch long, and lay them in rows in the trench, six or eight inches apart, and fill up the remaining fifteen inches with soil, being careful that it is well bruised and broken; and the sticks will come up, and grow handsome in two seasons.

Kidney-Beans.—The hardy early kinds may be planted three in a pot, to be forced in a green-house or hot-bed.

Lettuces that have stood the winter may now be planted out in warm situations, and protected from wind, which at this season is even more destructive than frost.

Mushroom beds require to be kept warm, and not too dry. If they are in the open air and the covering becomes wet, it must be changed, and replaced with dry straw.

Onions.—Plant out a few of the finest bulbs for seed. The bulbs should be two-thirds in the ground, and a foot from each other. Also, plant the small autumn bulbs six inches apart, for use; and sow a few seeds in drills, to draw young for salads.

Parsley.—Sow in drills or around borders. The most curly-leaved is the most esteemed. There is a kind cultivated for the root, but, except the flavour is required very strong, it is not desirable.

Peas.—Make small sowings about every three weeks. The first sowing this month should be three weeks from the last sowing in January, and so continue once in three weeks, till July. Earth up any that are advancing in growth.

Potatoes.—Plant a few ash-leaf kidneys in the old asparagus beds, or a row under a south wall. Dig the space all along and well bruise the earth; lay whole sets on the top, a foot apart, and cover them with earth to the depth of four inches, which may be sloped a little, and thus form a sort of bank just under the wall.

Radishes and Salads of all kinds may be sown in frames and on open warm borders. The latter must be protected with litter of some kind, on frosty nights, and removed in the morning.

Rhubarb and Sea-Kale may be covered for forcing, either with pots or boxes, and sur-

rounded with fermenting leaves or hot stable dung.

Spinach.—Sow in open weather a small quantity, and continue the same every three weeks. Winter Spinach now in use, should have the outside leaves only picked, leaving the centres to grow out, and keep up a succession.

Turnips.—Sow a few early Dutch, or some of the new sorts, in favourable weather, towards the end of the month.

CUCUMBER AND MELON-FRAMES.

Cucumbers.—When the plants were sown as directed last month, they will be ready to plant out on the fruiting beds some time during the month. If the beds are of dung, the heat must get moderate before the plants are put out; and the soil should have been placed ready in the frame some days previously, so as to get warmed through. Form the soil into a little hillock in the centre, and place the plant so as to be about six inches from the glass. Regulate the temperature, by linings of hot dung, to about a mean of seventy degrees by day, and eight or ten degrees lower at night. Sprinkle the sides of the frame every morning as soon as the sun "pops out," and shut up close for half an hour; then give more or less air through the day, according to the weather and the state of the beds. They must have the same kind of treatment if in hot-water pits, only they will then be less troublesome. Above all things, avoid a powerful bottom heat; eighty degrees is quite enough at the root. A few seeds should be put in, so as to have a constant store of young plants against emergencies.

Melons.—Very early Melons, though prized for the sake of the variety they afford in the dessert, are, in fact, but little worth: it takes all the sun of a good, bright, English summer to produce a good melon; and what are obtained both very early and very late are but poor apologies for the "fruit in due season." A few seeds may be sown in the cucumber-frame, and as soon as they are large enough, that is, when two or three pairs of leaves are formed, they should be planted out, and treated as recommended for cucumbers, only the soil should contain a much greater proportion of strong loam.

FRUIT-GARDEN.

THE general pruning of hardy orchard fruits, such as Apples, Pears, Medlars, &c., should have been finished before this time; and also, that of the small fruits, such as Currants, Gooseberries, &c. When it is not done, no time should be lost in having it completed: the pruning of the tender wall-fruits should not be delayed later than the middle of the month.

Dress standard fruit trees that are infested with lichen or moss on the stems, with dry wood-ashes, in moist weather: this will kill the moss, and benefit the trees.

Grafts.—Early in the month select and cut proper shoots for grafting; place the lower ends firmly in moist earth till grafting time.

Grafting-clay should be prepared this month, by mixing soft, fine clay, with a proportion of dry horse-droppings and chopped hay: it should be worked up like stiff mortar, and laid up in a compact heap, and covered up from drying winds.

Cuttings of all the kinds of fruits which are propagated in that way may be planted: these include such as Gooseberries, Currants, Figs, Grapes, Mulberries, &c.: the latter grow from large truncheons set in the ground. With many fruits, such as Gooseberries, it is an advantage to plant cuttings of the just-ripened wood during the summer; these become rooted, and make established plants by winter, and thus much time is saved.

Planting.—All kinds of fruit trees may be planted when necessary. In fact, where spring planting is rather preferred, or necessarily practised, open mild weather during February is just the time for performing it, and much preferable to any later period. As a general rule, plant the trees high—that is, with the roots about level with the ordinary surface; and always spread the roots out quite straight, in lines diverging from the stem equally on all sides.

Layers of any kinds of fruit trees may be made, when that mode of propagation is preferred to cuttings and grafts.

Peaches and Nectarines.—The pruning of these should now be got on with rapidly, but the trees should not be nailed to the walls; this operation should be delayed as long as possible, in order to keep the buds from swelling too rapidly.

Nailing generally should be brought to a close before this, if possible, except in the case of Peaches, &c., which are better, if delayed as long as possible: if any of the general nailing remains to be done, let it be finished speedily. Place the shreds alternately, and so as to bear in an opposite direction on the shoot, and use as few as will keep the shoot in the required position; nothing looks worse than to see too many nails and shreds fixed about a tree. For the small shoots, the shreds should be about half an inch wide, and just long enough to admit of the nail being driven, so as to allow the shoot rather more than twice its diameter to swell in. For the larger shoots, which require very few nails and shreds, the width and

length must be increased in proportion. *Never drive the nail close to the shoot in order to fix it straight*, for by this means, the shoots get wounded; neither is it necessary in order to keep the shoots straight, for a very slight degree of attention in placing the shreds alternately in opposite directions, will be quite sufficient to hold them perfectly firm and straight. If the ground is wet, get some boards to stand on, or what is better, use the wooden shoes or *sabots* of the continent.

Vines on walls should be pruned and nailed without delay. It is a pity that the growth of Vines in sheltered situations out of doors, as in vineyards, should have been suffered to go out of practice.

Figs.—Reduce the covering where they have been protected during winter; but do not take it *all* away suddenly. Let the reduction be made gradually, and then the plants will not suffer whom they are fully exposed. If the season is mild enough to permit their being quite uncovered, let them be pruned and nailed immediately. Bend the strongest shoots downwards, to cause them to throw out short-jointed and fruitful shoots.

Strawberries.—New plantations may be made towards the end of the month; the plants in the old beds should have the *dead* leaves cut off, and the soil about them forked up between the rows, the manure applied in autumn being turned in. If the beds were not dressed in the autumn, it may be done now; the application of soot during showery weather, in the month of April, is one of the most successful ways of manuring strawberries.

Stocks for grafting, &c.—Sow the seeds of Apples and Pears for stocks. Crab stocks for Apples, and those of the Quince for Pears are usually preferred to what are termed *free* stocks, obtained by sowing the seeds of the cultivated kinds of Apples, Pears, &c. Small portions of the root of the plum used as stocks, may be planted to serve as stocks for budding Peaches, Plums, &c. Seeds of the Cherry may also be sown to produce stocks proper for Cherries.

Newly planted trees.—Where there are any trees newly planted, let them be carefully staked, and the soil over the roots covered with litter, or long strawy dung as a mulching.

Young trees, which have been planted a year or two, and are growing too luxuriantly, should have the roots carefully forked out, and some of the strongest shortened back; or the trees may be taken up entirely, the roots cut, and then replanted.

Fork up the ground among all plantations of fruit as soon as pruning is completed, and there is no further necessity for trampling on the soil.



Apricots should be pruned and nailed.

Buds of tender wall-fruits, such as Peaches, Nectarines, Apricots, &c., should be protected from frosts, especially if they are advancing rapidly. Many protecting materials are recommended, and generally that which is presented by local circumstances may be chosen: the small branches of spruce fir-trees stuck top downwards among the shoots of the wall-trees, efficiently protect them, and have this advantage, that the leaves of the fir fall gradually, and then the trees are gradually uncovered.

Raspberries.—The tops of the canes, which should have been selected, and tied to the stakes in autumn, may now be cut off level with the stakes, and the ground forked between the plants. New plantations may be made.

Espalier trees should have been pruned, and the branches are now to be trained in, as soon as possible, if not already done.

Vilberts, and other nut-trees, are worthy of being more generally cultivated. They bear abundantly when kept dwarf, like a currant bush, (though somewhat larger;) the centre of the trees should be kept open like a cup.

Walnuts and Chestnuts may be planted any time during the winter season. If introduced to orchards, they ought to be confined to the outside, so as not to injure other trees by their naturally large growth. In this situation, their size may be a recommendation to them, for if collected on the exposed side of an orchard, they may be so arranged as to afford beneficial protection to the other trees, which is often of much importance.



Iris pumila.

THE IRIS—ITS HISTORY, VARIETIES, AND CULTURE.

THE Iris, (*Fleur de Lis*, or *Fleur de Luce*,) or the Flag, is the heraldic emblem of France. It was introduced to the French coat of arms by Louis the Seventh, who, when he joined the romantic expedition of the Crusaders, as was customary in those times, chose the Iris flower as an armorial ensign; and from that time it has been called *Fleur de Louis*, which was contracted into *Fleur de Luce*, and still further, afterwards, into *Fleur de Lis*, or lily-flower, although it has no direct affinity with the lily. The Iris-flower soon became celebrated in France as the *Fleur de Lis*. Dr. Turner, in 1568, says the Iris is called Flower de Lyce; but Gerard and Parkinson write it Flower de Luce.

The Iris, which the English florists have

taken under their especial care, is commonly called the English Iris; and many very beautiful varieties have been named, and exhibited in collections at the various horticultural shows. They have much larger flowers than the Spanish or Persian, as well as larger bulbs. The old gardening works mention eighteen species, but the last three are the only bulbous-rooted kinds mentioned; the first fifteen being tuberous-rooted, and propagated by parting the roots, or rather, by taking off the natural suckers or offsets; for the roots will grow rapidly, and every new shoot of them throws up leaves, and forms a plant on being separated. The principal bulbous-rooted one is a native of Spain, one is a native of Persia, and one of Spain and Portugal.

Modern works enumerate nearly ninety species, but there appears no good foundation for calling some of them species. The only bulbous-rooted kinds named by Lindley and Paxton, in the *Botanical Dictionary*, are—

I. alata, flowering blue, in June, introduced 1801, from Algiers.

I. tenuifolia, flowering light blue, in May, introduced 1796, from Dauria.

I. tuberosa, flowering green and blue, in March, introduced 1597, from the Levant.

I. Xiphium, flowering blue and yellow, in June, introduced 1796, from Spain.

I. xiphioides, flowering blue and yellow, in June, 1571, from Spain.

But there is so great a diversity in the Persian, the Spanish, and those raised in England, many of which latter are of large size, that there may be found much more palpable distinctions among a number of seedlings, than can be found between the kinds recorded as separate species. The English Iris may be purchased now in large collections, of extraordinary colours and noble forms, as compared with the imported kinds. To these we direct our particular attention, as perseverance will unquestionably produce still more beautiful varieties than we yet possess.

The cultivation of the bulbous Iris is simple: they will all grow in light rich soil in perfection; but they will grow and flower well in almost any garden-mould. The first care should be to obtain a collection of the largest flowering kinds, which can be had now at most respectable nurseries; let these be planted one foot apart, in a bed of loam, dung, and sand, so that, in fact, the compost may be rich without being heavy: here they will require no other care than allowing them three inches of soil above their crowns. If the bed is much exposed to the wind, the flower stems may be supported; but, in a general way, they do not require it; here they will flower well, and must have all the weather, unless a wet season sets in about the time of their opening, for too much wet on their flowers would spoil their seeding; they may, therefore, be protected a part of the time from very heavy showers. When a seed-pod begins to swell, which that of the first bloom that opens will before the others bloom, the remainder must be picked off; and it is the custom with some to prevent any but the first flower from opening, and run the risk of the pod swelling. The greatest care must be taken that while the seed-pods are growing the plants are never dry, for watering is essential, unless the season be naturally moist enough to nourish them well. In due time the pods will swell to perfection, and the leaves begin to turn yellow; as soon as the pods are pretty ripe, they may be cut off with a piece of the stem, and laid

in the dry, where, if they happen to burst, the seeds will be saved, and not blown away. In September, which is soon after they are ripe, the seeds may be sown in light compost, in wide-mouth pots, or ordinary seed-pans, very evenly, and not too close together; that is, not so thickly as to inconvenience each other when up and grown a little. These pans should be placed where they will have only the morning sun, and gentle showers, if there be any; if not, they must be judiciously watered; for if they once dry after swelling, it is a great chance but they die altogether. It is necessary, although they are very hardy, to cover with a hand-glass, or place them in a frame, so that they can be protected against an excess of wet, which would rot them. Early in the spring the young plants will come up, when they must be kept clear from weeds, and, as soon as the weather is mild enough, they may be placed in a shady place in the open air; or, if they remain under glass, they must be shaded from the hot sun, though they may with advantage have it during the early part of the morning. Here they must be weeded and watered carefully all the while they are growing, and may remain until the leaves die down. It has been a custom to let them remain in their seed-pans, or pots, to grow a second season before they are disturbed at all; but it is found better to let them remain till September only, and then to prepare other pots or pans in which to remove them; and when they are filled with a compost of loam, leaf-mould, and dung, and a small portion of sand to lighten the soil, the bulbs, which will be but small, must be taken from the first pans, and planted in their new pots, one inch apart, all over the surface, and covered half an inch with the same description of soil. Here they will thrive faster than if left in their old pots; and, as before coming up in the spring, and dying down in the summer, the attendance and treatment required will be the same as the seed—weeding, watering, and shading as before. The bulbs will, this second season, have attained a size that will bear planting in the open ground, in a bed of light rich earth, in which drills may be drawn six inches apart, pretty deep, so that the bulbs may be planted in them three inches from each other, and be covered three inches with the soil that has been thrown out on each side of the drill. Here they will come up in the spring, and die down in the summer. The bed must be kept perfectly clean from weeds, and, when the leaves die down, an inch of fresh earth may be sifted over them, and the surface levelled. The next time they come up most of the flowers will appear, and then such must be marked as are improvements upon the kinds they are saved

from, and the rest thrown aside. The points to look for as advantages are several:—

Thickness of the outer petals.

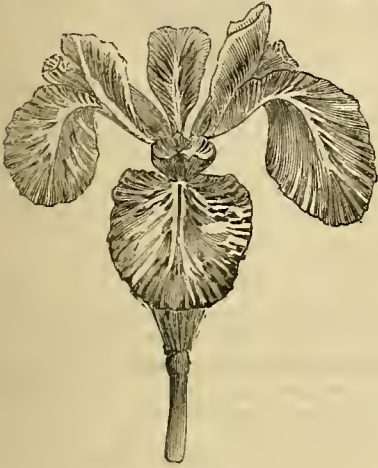
Breadth of the outer and inner petals.

Colour, which must be unlike what we already possess.

Size of flower, which in the Iris is important.

A strong stem, standing well out of the foliage, and displaying all the flower.

Those selected for some of these qualities, —which, by comparison with the kind from which the seed was saved, should be better, or very different, to make them worth saving— may be taken up when the foliage has completely died down, and laid by until planting



Sir John Broughton Iris.

time, when they should be planted six inches apart all over the bed, with labels to them, denoting their names, numbers, or distinguishing characters; and the soil in which they are planted should be free from recent, or half-decomposed dung: none but such as is completely rotted into mould should be used; and if you can get plenty of leaf-mould to mix with the soil, or have any loam from rotted turfs, the Iris will do well in it without dung; nevertheless, if the ground be poor, it will require leaf-mould, or well-rotted dung, to give strength to the plants, and size to the flowers. They should only be removed once in two years, unless there be any particular object to be gained by it; for they will increase their offsets better when not disturbed; and among the choice flowers this is an object; but, as the fine ones worth saving are few in number compared with the rejected ones, it is necessary to remove them the year they bloom, to plant them alone, and at proper distances: after which every other summer is often enough to take them up, and replant them. The season they are not removed, some fresh earth should be sifted over them in September,

and not a weed must be allowed to grow on the bed at any period. At the end of the second season, when they are to be taken up, they must be kept with their offsets separate from every other sort; for, in all florists' flowers, mixtures are worth but little, compared with flowers kept to their distinct sorts and names. The bulbs of the Iris are hard and dry, and will lie by for some time, if kept cool and dry; but they ought to be in the ground again by the end of September, or the beginning of October, however much longer people may, with seeming impunity, keep them unplanted. The Spanish and Persian Iris will succeed under the same treatment; but they are, by comparison, inferior as florist's flowers, and few who begin cultivating the larger sort pay any attention to either of the others; nevertheless, they are exceedingly pretty border flowers; they are as hardy as could be wished, and multiply rapidly when only planted in the common open border, without any dressing, or preparation to the ground, whatever it may be. Their inferiority consists in the narrowness of their petals, and the comparative dullness of their colour. All the herbaceous varieties grow like weeds, and spread into large patches in an incredibly short time: of these there are many different colours and habits, but, for the most part, they are grown in wild masses, and very wide borders, where more regard is paid to the quantity than quality of the subjects.

FLORISTS' VARIETIES OF BULBOUS IRIS.

Agatha, white.

Andromeda, white with red and violet spots.

Anna Jane, white and rose.

Aurora, blue and purple.

Belmont, cherry and dark blue.

Belle Agatha, white and rose.

Belle Grise de lin, white with red and violet spots.

Blanche fleur, white.

Brilliant, blue and purple.

Cardinal's Hat, blue and purple.

Charles the Twelfth, white with red and violet spots.

Clio, white with red and violet spots.

Diana, blue and purple.

Don Quixote, cherry and dark blue.

Domingo, cherry and dark blue.

Duke of Tuscany, cherry and dark blue.

Erasmus, cherry and dark blue.

Favourite, cherry and dark blue.

Henry the Fourth, blue and purple.

Hercules, white.

Hyperides, white with red and violet spots.

Incomparable, white with red and violet spots.

Invincible, white with red and violet spots.

Inconulus, blue and purple.

- Jessica*, blue and purple.
La Tendresse, white.
La Beauté, white, with red and violet spots.
Lustre, blue and purple.
Lord Brougham, cherry and dark blue.
Lord John Russell, white, with red and violet spots.
Maria Louisa, white, with red and violet spots.
Matilda, white, with red and violet spots.
Ne plus ultra, white, with red and violet spots.
Nonsuch, blue and purple.
Orion, blue and purple.
Osman, blue and purple.
Pamela, white, with red and violet spots.
Paris, white with red and violet spots.
Penelope, cherry and dark blue.
Pigeon, white.
Priam, white, with red and violet spots.
Priam, blue and purple.
Pompeius Magnus, white, with red and violet spots.
Proserpine, blue and purple.
Princess Royal, white.
Queen Esther, white and rose.
Queen of France, white and rose.
Queen of Scots, blue and purple.
Rebecca, blue and purple.
Reform, blue and purple.
Robin Hood, cherry and dark blue.
Rosabelle, white and rose.
Rosinante, blue and purple.
Sir J. Broughton, white, with red and violet spots.
Sir J. Seabright, cherry and dark blue.
Spotted Lion, white, with red and violet spots.
Taglioni, white and rose.
Thesculda, cherry and dark blue.
Tricolor, blue and purple.
Triumph, cherry and dark blue.
Typhon, cherry and dark blue.
Ulysses, blue and purple.
Veronica, blue and purple.
White Wolf, white.
William Tell, cherry and dark blue.

Besides the varieties of *Iris Xiphium* and *I. xiphoides*, which are treated as florists' flowers, there are other species of this family of very distinct and different habits of growth. Thus, for instance, there is the small Persian Iris, which is best adapted for pot culture in this country, on account of its somewhat tender habit and small size: the strong growing herbaceous kinds, such as *I. germanica* and *I. sambucina*, prefer rather moist situations, and are adapted for shrubbery borders: the less vigorous of the herbaceous kinds, together with one or two which are somewhat tender in cultivation, require positions as favourable

as a garden affords, in respect to soil and climate; that is to say, they require a position where the soil is well drained, and where they



Iris xiphoides.

will experience the melioration of climate which this circumstance secures. There are one or two green-house species. Then, again, there are some few aquatic kinds which should be planted *near* or *in* water.

THE PERSIAN IRIS.

THE Persian Iris (*I. persica*) is to be obtained in the seed-shops along with other bulbs: they should be procured as early as possible in the autumn, for, as they bloom at an early period of the spring, it is important to get them planted as soon as can be done, in order that they may become well established at the root, previously to expending their energies in the production and development of flowers. The manner of securing this is nearly the same with all the class of bulbs, which are potted annually, and may be briefly stated thus:—When the roots are potted (the manner of doing which will be noticed presently,) the pots should be taken to a cool, dry, shady place, (a cool frame is the best place,) and there plunged in some cool porous material, such as coal ashes, old spent tanners' bark, coarse sand, or, in fact, anything of this nature which will serve to keep the soil and roots not only cool and unacted on by atmospheric changes, but which, from being *moderately* damp, will not abstract moisture from the root, but keep it also uniformly and evenly moistened. What is meant by moistened in this place, is not the presence of water, in visible

quantity, either among the soil in the pots, or round about in the material *on* and among which they are placed ; this would be an *excess* of moisture for the particular object in view. What is required is that the soil should be kept just evenly moistened ; and, from the porous nature of the surrounding media, while it retains just so much moisture as this, at the same time, it allows all that is superfluous to pass downwards without lodging about the bulbs ; the drainage in the pots, of course, secures the downward passage of the moisture that comes in contact with the soil in the pots.

The object which is sought to be attained by this arrangement, is to induce the roots to grow before the leaves and flowers, so that the latter may possess greater vigour, in consequence of the roots being already in an active state, and in a condition to supply nourishment. It must be recollected that bulbs of this nature are generally accelerated in their blooming by an increase of temperature. Were the roots to be placed within the influence of this increased stimulus, *before the roots had begun to form and elongate*, the natural effect would be, that it would stimulate that part to which it could gain most easy access ; now, this part is the top of the bulb, not the base whence the roots proceed ; this latter being, of course, buried deeper in the soil than any other part of the bulb, is more beyond the influence of the atmospheric warmth than that part of the bulb whence the leaves proceed ; and consequently these latter, and not the others, are first excited to grow ; and the consequence is, that the growth of these parts expends the nutrient matter of the bulbs, before a fresh supply is afforded by the action of the roots. The effect of all this is languor, with its attendant disadvantages—smaller flowers, shorter duration, less vivid colours, and less powerful fragrance.

If a potted bulb is taken to a high temperature before its roots are in an active state, there is but one means of inducing a corresponding growth in both parts, and that is, to plunge the pots in a material which will afford bottom heat, or *heat to the roots*. This would do very well for plants naturally found in hot climates, but a degree of heat at the roots, sufficient to keep those organs in advance of the leaves, when placed in a forcing-house, would be far too powerful for plants nearly, if not quite, hardy, as in the case of the bulbs under consideration, and particularly the Iris.

For this reason, therefore—a reason involving a fundamental principle in plant culture, namely, the necessity of the action of the root preceding that of the leaf ; for this reason, the bulbs should be potted early, and, when potted, placed in a cool situation such as that referred to, where they will be kept *very moderately*

moist, and secure against the direct influence of fluctuations of the atmosphere.

The bulbs should be potted in a mixture of light soil, not over rich ; equal parts of sandy loam, and well reduced leaf-mould, form a very suitable compost. The pots should be well drained, and the bulbs placed with their upper ends an inch or so beneath the surface of the soil. For those that are potted early, and plunged as directed, it is desirable to place the soil in quite lightly, without pressure of any kind, raising it up above the pots in the form of a depressed cone, and so placing the bulbs as to allow of its subsiding to its proper depth in the pot : the advantage of this method of potting is, that it allows the superfluous moisture to pass off more readily when the roots are first potted, and the roots also are enabled to extend with greater freedom than in a more solid mass. By the time the roots are required for the forcing-house, the soil will have subsided, and may then be dressed off evenly. When they are potted late, and there is not time for plunging them for any lengthened period, this method of potting is not so applicable as when they are potted earlier, for, in this case, the soil would not have time to become settled down evenly. If left to flower without the application of artificial heat they will bloom about April ; but if gently forced they may be had in succession two months earlier. After flowering, the roots require to be dried off, like other bulbs, till the potting season in the succeeding October.

For those who like the trouble of growing them in beds in the open air, the following plan will succeed :—In the autumn, pot a sufficient number of roots as above directed, preserving them all the winter in a sheltered place : in the spring they may be planted out, and will be gay during April and the beginning of May. This, however, is a troublesome mode of treatment, for the blooms require to be protected from spring frosts. When planted out-doors, the roots must be taken up every season ; and they may either be potted in the autumn, or kept in sand during winter, and planted out in the spring ; in the latter case, they become exhausted, and do not flower well ; if planted out-doors in the autumn, they would probably perish in the winter. This plant is propagated by offsets from the bulbs.

THE DELICATE TUBEROUS-ROOTED SPECIES.

THESE, for the most part, may be grown with little difficulty in the ordinary flower border, or in beds by themselves. If the soil is effete, or worn-out, it should have a portion of fresh loam and leaf-mould added to it, and will then be well adapted for them. Generally, the soil should be well drained for this class ;

and when that is the case, there is little danger of their being injured by cold. If the situation is decidedly unfavourable for the preservation of delicate plants, it will be safer to take up the most tender sorts, and pot them, keeping them in a cool frame during winter, and planting them out again in spring. If they are left in the ground and require transplanting, the early part of spring is the best period for this to be done; and, as a general rule, they should by no means be disturbed on the approach of winter. In planting, the tuberous root-like stems, or rhizomas, as they are termed, should be kept about level with the general level of the surface, and very slightly covered (an inch or so) by raising the soil about them. They are propagated by dividing these rhizomas. The Chalcedonian Iris succeeds with treatment of this sort, if well watered in summer and a little protected in winter.

THE ROBUST TUBEROUS-ROOTED SPECIES.

THESE are among the freest growing of herbaceous plants, succeeding well in common garden soil, especially if it is a *little* moist. Being mostly plants that grow to a considerable size, spreading so as to form a large tuft, and many of them rising two to three feet in height, it will be perceived that the situations for which they are adapted, are those large miscellaneous flower borders where all kinds of plants are planted indiscriminately, save that the tallest are ranged near the back, and the dwarfer ones in front. In such a situation as this, these kinds are perfectly in keeping. They are also suitable for shrubbery borders, that is to say, borders by the sides of the walks in shrubberies, where flowers are planted in front of the shrubs. When a bed or clump is devoted to the growth of a collection of Iris—and they would certainly make a very striking group—these larger growing kinds should of course occupy the central parts, while the dwarfer ones in order, should be ranged around them. They are propagated by the division of the rhizoma, or root-stalk.

THE BULBOUS-ROOTED SPECIES.

THE different bulbous-rooted kinds, excluding the varieties of *I. Xiphium*, and *I. xiphoides*, which come within the province of the florist, should be treated something in the way recommended for the delicate tuberous-rooted varieties, excepting that the roots are quite as well taken up after flowering, and kept buried in sand till the planting season, which should be about October.

THE AQUATIC SPECIES.

THE common *Iris Pseud-Acorus* is well adapted for planting by the margin of pieces of water, in which places it is naturally found.

The Gladwyn Iris may also be planted in similar situations, scarcely so much *in* the water as the other. Their long upright sword-like leaves, altogether independent of their flowers, have a very fine appearance in such situations. They require no special cultivation, requiring only to be securely planted in the mud, or soil, as the case may be.

THE CHINESE IRIS.

THIS plant may be grown out of doors, provided it has a dry situation and is protected from frost. If kept in a frame in winter, and planted on a warm border, against a south wall in summer, it will produce flowers. Under good green-house treatment, it will attain a considerable degree of perfection, requiring to have a period of rest in winter, to be planted in light rich sandy loam, and to be grown very freely, and well ripened in summer time. Mr. Mearns, curator of the Leeds Botanic Garden, details the following as a very successful mode of treating it:—The plant is well known to produce suckers in abundance. The plants are treated as pine-suckers, but without bottom heat; and, although they grow in a common green-house, they do better in a pine-stove. It is of the utmost importance to secure a sturdy growth, by taking advantage of the fine weather of summer and autumn, to mature the growth previous to flowering. When a stock of young plants has to be kept over the winter, the green-house is the best place for wintering them, as they are kept more dormant and are more vigorous when excited. They are shaken out of the soil, and the roots are trimmed very closely, removing every appearance of the embryo of suckers; they are then potted in good rich compost, into small pots, (three-inch ones will do,) and placed in a stove, or warm pit, and very carefully watered. As the roots increase they are re-potted, but care is taken never to *over-pot* them, or to get them into too large pots. At almost every potting, a good deal of the soil is removed, and replaced by fresh soil; the suckers also, if any are produced, are removed. If the roots are not numerous enough to require a larger pot, they are re-potted into those they were taken from. "As I find it needful to push my plants on," continues Mr. Mearns, "I re-pot them four or five times in the season; and they will send up a branch a yard high, with a long succession of blossoms. The stock may be kept in a green-house, and, if the temperature be not too low, they will bloom there in the winter; but to keep them in longer succession, some should be placed in the stove early in autumn; and as they come into flower, they should be removed to where they may be required, and others replaced in the stove in succession. Whilst these plants,

by being divested of all suckers, are being prepared for blooming, it is better to encourage a few to produce suckers, which they will do abundantly; this will be the more certain means of having a good supply of plants by the middle of February—the proper season to start them for their summer growth.” The old plants are to be thrown away after flowering. Those who have not the convenience of a stove, may adopt the same course of treatment in a green-house. All the tender kinds may be similarly managed according to their peculiar characteristics.

DESCRIPTIVE LIST OF IRIS.

Iris acuta. (The acute-leaved Iris.*)—A hardy, herbaceous perennial, growing two feet high, and producing its blue flowers in May and June.

Iris alata. (The winged Iris.)—A dwarf bulbous species, nearly hardy, growing about six inches high, and bearing its flowers in February and March: the outer petals are beautifully variegated with white, purple yellow and blue; the inner petals light blue, and rose-coloured at the margins. Native of Algiers, Spain, and Portugal.

Iris amoena. (The pleasing, or delicate Iris.)—A hardy herbaceous perennial, growing about a foot high, with delicate blue flowers, produced in May and June.

Iris arenaria. (The sand Iris.)—A hardy herbaceous perennial, growing about six inches high. The flowers are yellow, opening from May to July. Native of Hungary.

Iris aurca. (The golden Iris.)—A hardy herbaceous perennial, attaining two feet in height, with yellow flowers in May and June. It is a native of Germany.

Iris biflora. (The two-flowered Iris.)—A hardy herbaceous perennial, growing a foot and half high, and producing purple flowers in April and May. Native of the South of Europe.

Iris biglumis. (The two-glumed Iris.)—A hardy herbaceous perennial, growing about three inches high, and producing blue flowers in May and June. Native of Siberia.

Iris Blondonii. (Blondow's Iris.)—A hardy herbaceous perennial, of which but little is known; it is from the Altaic mountains.

Iris Boltoniana. (Bolton's Iris.)—A hardy herbaceous perennial, growing two feet high, with blue flowers, which are produced in May and June. Native of North America. This is also called *I. gracilis*.

Iris bohemica. (The Bohemian Iris.)—A

hardy herbaceous perennial, growing a foot high. The flowers are blue, produced in May and June. Native of Bohemia.

Iris brachycuspis. (The poisonous-rooted Iris.)—A hardy herbaceous perennial, of moderate size, with long sword-like leaves, and small purple flowers. It blooms from May to July. It is native of the north-eastern parts of Siberia.

Iris caucasica. (The Caucasian Iris.)—A hardy bulbous species, growing six inches high, and bearing yellow flowers in March. Native of the Caucasus.

Iris chinensis. (The Chinese Iris.)—A half-hardy perennial herbaceous plant, growing two feet high, with broad leaves, and handsome fringed light purplish rose-coloured flowers. It flowers in May and June. Native of China. It bears the cold of ordinary winters: called also *I. fimbriata*.

Iris clandestina. (The clandestine Iris.)—A green-house, evergreen herbaceous plant, growing about a foot high, and flowering in May. Native of Brazil.

Iris caelestina. (The sky-blue Iris.)—A half-hardy herbaceous perennial, attaining a foot and a half in height. The flowers are pale blue, opening in June. Native of North America.

Iris crassifolia. (The thick-leaved Iris.)—A small growing green-house herbaceous perennial, with long leaves, and beautiful white flowers; the three outer segments with a blotch of deep yellow, and the inner ones with an oblong dash of blue along the centre: a very beautiful species. It is a native of the Cape of Good Hope, and flowers sparingly in July and August.

Iris cristata. (The crested Iris.)—This is a dwarf, hardy herbaceous perennial, growing six inches high, with short sword-like leaves, and pale lilac flowers, with an oblong dash of yellow, bordered with purple down the base of the three expanding segments; the tube is unusually long and brittle. Flowers in May and June. Native of North America.

Iris curtropetala. (The short-petalled Iris.)—A hardy herbaceous perennial, growing a foot and a half high. It has yellow and blue flowers. Blooms in May and June; called *Vieusseuxia iridioides*.

Iris deflexa. (The deflexed Iris.)—A green-house, or half-hardy herbaceous perennial, growing a foot and a half high. It has lilac-coloured flowers which open in June. Native of Nepal: nearly allied to *I. subbiflora*.

Iris dichotoma. (The two-forked Iris.)—A hardy herbaceous perennial, growing a foot and a half high, with pale bluish purple flowers, opening in July and August. Native of Dauria. This is a most curious species, and

* The Irises are also distinguished by the English name of *Flag*; and the French name, *fleur-de-lis*, whence *flower-de-luce*.

is sometimes called Afternoon Iris, or Scissor plant. It has the slenderest stem, and smallest flower of all the Irises; the flowers never expand until after midday: hence its trivial name. In Dauria its Mogul name is *Cheitschi* (scissors), from the form of the fork, produced by the two branches which support the flower. This is not even "the flower of a day," for it collapses before night by a two-fold inflection.

Iris elegans. (The elegant Iris.)—A hardy herbaceous perennial, growing two feet high, and flowering in July. The flowers are yellow.

Iris ensata. (The sword-leaved Iris.)—A hardy herbaceous perennial, growing a foot and a half high, and producing blue purple flowers in June and July. Native of Austria.

Iris flavescens. (The flavescent Iris.)—A hardy herbaceous perennial, growing two feet high, and flowering in May and June. The flowers are yellow.

Iris flavissima. (The yellowest Iris.)—A hardy herbaceous perennial, growing from six to nine inches high, and bearing bright yellow flowers in May and June. Native of Siberia.

Iris flexuosa. (The zig-zag Iris.)—A hardy herbaceous perennial, growing two feet high. The flowers are white: blooms in May and June. Native of Germany.

Iris florentina. (The Florentine Iris.)—A hardy herbaceous perennial, growing two feet high. Its leaves are broad; the flowers large and light grey, almost white. It flowers in May and June, and is a native of Italy, and other parts of the South of Europe. A variety called *minor*, has light grey flowers. The dried root of this plant was formerly used in medicine; but it is now confined to some insignificant lozenges as an expectorant; and to the manufactory of the perfumer, to whom it is known by the name of Orris, or Orrice-root, being used to give to certain articles, such as hair powder, the scent of violets, for which purpose it is imported, our climate not producing the flavour and other qualities possessed by the Italian root.

The Orris-root is frequently chewed by persons troubled with fetid breath, and was formerly much esteemed in medicine; at present it is chiefly employed to communicate a pleasant flavour.

Iris fetidissima. (The most fetid, or the Gladwyn Iris.)—A hardy evergreen herbaceous perennial, growing two feet high, and upwards. The flowers are of a livid blue, opening in June and July. It is a native of Britain, in shady places. A variety with striped leaves is called *variegata*.

Iris fragrans. (The fragrant Iris.)—A hardy herbaceous perennial, growing about

two feet high. The flowers are purple at the extremities, and white, with purple streaks lower down the throat, and blooming in May and June. It is from the north of India.



Iris fulva.

Iris fulva. (The copper-coloured Iris.)—A hardy herbaceous perennial, growing three feet high. It has long narrow leaves, and large showy orange or bright copper-coloured flowers. It flowers in June and July, and is also called *I. cuprea*. Native of the low grounds, on the banks of the Mississippi, near New Orleans.

Iris furcata. (The forked Iris.)—A hardy herbaceous perennial, growing two feet high, with moderately broad leaves, and small compact flowers, of a deep violet purple. It flowers in March and April. Native of the northern Caucasus.

Iris germanica. (The German, or common purple Iris.)—A hardy herbaceous perennial, common in every garden, but, perhaps, one of the most showy of the species. It grows about two feet and a half high, and has very broad leaves, and large flowers, the outer reflexed petals of which are dark purple, the inner erect ones light blue. There is a small variety, called *pygmæa*, and one with white flowers, called *flora alba*. It flowers from May to July. Native of Germany and Switzerland. The flowers are fragrant. "A pigment, used by miniature painters, called *vert d'iris*, or Iris green, is made from the flowers, macerated, and left to putrify, when chalk, or alum, is added. The root, when first tasted, is slightly bitter, afterwards producing a most insufferable heat in the throat, as do the flowers in a lesser degree."

Iris graminea. (The grass-leaved Iris.)—A hardy herbaceous perennial, growing about a foot and a half high, rather slender, with narrow sword-like leaves, and moderate-sized purplish lilac flowers, the three outer petals being whitish, streaked with blue; they are scented like fresh plums. It flowers from May to July. Native of Austria.

Iris Guldenstadtii. (Guldenstadt's Iris.)—A hardy herbaceous perennial, growing two feet high. It blooms with yellow flowers in April and May. Native of Siberia.

Iris Hookeri. (Hooker's Iris.)—A hardy herbaceous perennial, a foot and a half in height, and producing purple flowers in May and June. Native of North America.

Iris Humei. (Sir A. Hume's Iris.)—A hardy herbaceous perennial, growing two or three feet high, and flowering in April and May. The flowers are blue. Native of Nepal. Called also *I. nepalensis*.

Iris humilis. (The low Iris.)—A hardy herbaceous perennial, growing about a foot high. It flowers in April and May, producing blue flowers. Native of the Caucasus.

Iris hungarica. (The Hungary Iris.)—A hardy herbaceous perennial, of moderate size, with short rather broad leaves, and compact violaceous-coloured flowers; the three outer segments are reddish purple, and reflexed; the other three erect, and bluish violet, variegated with pale veinings in the centre. It flowers in April and May, and is a native of Hungary.

Iris iberica. (The Iberian Iris.)—A hardy herbaceous perennial, growing a foot and a half high, and producing reddish flowers in May and June. Native of Iberia.

Iris imbricata. (The imbricated Iris.)—A hardy herbaceous perennial, of the larger growing class. It has large, pure, pale lemon-coloured flowers, which appear about the end of May. It is very near *I. squalens*, and is possibly a variety of that kind. It has been recently flowered by the Dean of Manchester.

Iris lavigata. (The smooth Iris.)—This name is recorded in the catalogues, without any descriptions.

Iris livida. (The livid Iris.)—A hardy herbaceous perennial, growing a foot and a half high. The flowers are of a livid colour, and are produced in April and May. Native of the Levant.

Iris longiflora. (The long-flowered Iris.)—A hardy herbaceous perennial, but little known. It grows two feet high, and flowers from April to June.

Iris longifolia. (The long-leaved Iris.)—A hardy tuberous-rooted plant, attaining about nine inches in height. It has purple and greenish flowers in April. Native of Naples.

Iris longispatha. (The long-sheathed Iris.)

—A hardy herbaceous perennial, of moderate size, but growing three feet high. The leaves are very long; the three outer recurved petals of the flowers are white, tinged with yellow, and beautifully veined with blue; the three inner ones are erect, and dark violet-coloured. It flowers in June and July, and is native of Siberia.

Iris lurida. (The dingy Iris.)—A hardy herbaceous perennial, growing about a foot and a half high. The leaves are broad; the flowers rather above medium size; the outer petals of which are dark dingy purple, with whitish streaks at the base; the inner ones, a livid purplish yellow. Flowers in May and June. Native of the southern parts of Europe.

Iris lusitanica. (The Portuguese Iris.)—A hardy bulbous-rooted species, growing from two to three feet high. The leaves are channelled; the flowers are large, yellow, and lilac-blue; in some varieties pure yellow. It flowers in June and July, and is found on rocky hills, near the Tagus, above Lisbon.

Iris lutescens. (The yellowish Iris.)—A hardy herbaceous perennial, growing six inches high, and flowering in April and May. The flowers are pale yellow. Native of Germany.

Iris Monnierii. (Le Monnier's Iris.)—A hardy herbaceous perennial, growing six inches high, with yellow flowers, in May and June. Native of Greece.

Iris neglecta. (Horneman's Iris.)—A hardy herbaceous perennial, growing two feet high. The leaves are broad; the flowers are of medium size, purple and blue, and agreeably scented. Flowers from May to July. Native country unknown.

Iris nepalensis. (The Nepal Iris.)—A half-hardy evergreen herbaceous perennial, growing a foot and a half high. The flowers are blue, borne in April and May. Native of Nepal.

Iris nertchinskia. (The Nertchinsk Iris.)—A hardy herbaceous perennial, of moderate growth, with narrow leaves, and large blue flowers, variegated in the centre with pencillings of red and yellow ground. It is a native of Nertchinsk in Siberia, on the border of China. Flowers in April and May.

Iris notha. (The bastard Iris.)—A hardy herbaceous perennial, growing a foot and a half high. The flowers are purplish blue. Blooms in June and July. Native of Italy.

Iris nudicaulis. (The naked-stalked Iris.)—A hardy herbaceous perennial, growing about a foot in height. The leaves are rather narrow. The flowers rather greyish white, striped and streaked with blue. It flowers in May and June. There are two varieties:—*Svertii*, with greyish white flowers; and *plicata*, with white and blue striped flowers. Supposed to be from Portugal. The flowers smell like those of the orange tree.

Iris odorata. (The sweet-scented Iris.)—A hardy herbaceous perennial, growing two feet high. It produces blue fragrant flowers in June and July.

Iris Pallasii. (Pallas's Iris.)—A hardy herbaceous perennial, growing about a foot and a half high. The leaves are long and narrow. The flower small, pale blue. A variety called *chinensis* has also pale blue flowers. The former is a native of Tartary, the latter of China. It flowers in May and June.

Iris pallida. (The pale or Dalmatian Iris.)—A hardy herbaceous perennial, growing three feet high, with broad leaves, and very large pale greyish blue flowers, which have an exceedingly strong scent, resembling that of elder flowers. It blossoms from May till July. Native of Turkey. Sometimes injured by a severe winter.

Iris persica. (The Persian Iris.)—This is a hardy bulbous-rooted species, usually kept in quantities in the shops for sale among the other bulbs, and one of the most desirable of all the kinds to pot for the purpose of bringing forward in the forcing-house for the decoration



Iris persica.

of the green-house or conservatory. The blooms come up before the leaves, and rise not more than three or four inches high; they are of a pale, delicate bluish-lilac, with a dash of deep orange down each of the three outer petals, which have several black dots, and a large dark blotch near the point. They are so deliciously and powerfully fragrant, that a few flowers will perfume a whole apartment. Its flowering season is from February to April, according as it is more or less accelerated or retarded. Native of Persia.

Iris plicata. (The plaited-leaved Iris.)—A hardy herbaceous perennial, growing upwards

of two feet high, and flowering in May and June. The flowers are cream-colour and purple, and very fragrant.

Iris prismatica. (The prismatic-leaved, or New Jersey Iris.)—A hardy herbaceous perennial, growing a foot and a half high, with small narrow leaves and purplish-blue flowers; the outer petals streaked with dark purple. It flowers from May to July. Native of swamps in New Jersey, North America.

Iris Pseud-acorus. (The Yellow Water Iris.)—A hardy aquatic plant, common in many parts of England, on the margins of rivers and streams. It grows three and a half or four feet high, with large sword-shaped leaves and yellow flowers; and flowers in May and June. A variety imported from Carolina, called *pallida flava*, has pale yellow blossoms; and there is a variety with leaves striped with white, called *variegata*. This is an aquatic plant.

Iris pumila. (The dwarf Iris.)—A dwarf hardy herbaceous perennial, not growing more than six inches high. It has short broad leaves, and flowers which are large for the whole size of the plant. There are several varieties, with different coloured flowers, as a reddish purple; a dark purple, called *violacea*, (one of the best varieties); a yellowish one, called *lutea*; a white, called *alba*; a light blue, called *cœrulea*; a white and pale blue, called *alba cœrulea*; and Parkinson mentions varieties with blush-coloured and straw-coloured flowers. They flower from March to May. Native of Hungary, Austria, and the south of France.

Iris reticulata. (The netted-veined Iris.)—A beautiful little dwarf hardy bulbous plant, with very narrow leaves, and deep purple flowers, variegated with blue and yellow. It is from Siberia, and flowers in March and April.

Iris ruthenica. (The Russian Iris.)—A dwarf hardy herbaceous perennial, growing from six to nine inches high, with long narrow leaves, and dark blue-lilac flowers, white at the base, and streaked with parallel dark blue lines. A variety has lighter blue flowers. Native of Siberia and other parts of the Russian dominions. The flowers, which have the scent of violets, are produced in April and May. Nearly allied to *I. verna*.

Iris sambucina. (The elder-scented Iris.)—A hardy herbaceous perennial, growing three feet high. It has broad leaves and large flowers; the outer petals are purplish, white towards the base, and marked all over with dark brown veins; the inner ones are of a pale dingy cream colour; the flowers have an odour which much resembles that of the blossoms of the elder tree. Native of the South of Europe; and flowers in May and June.

Iris scariosa. (The scarious Iris.)—A hardy herbaceous perennial, growing about a

foot high. It produces blue flowers in May and June. Native of Russia.

Iris sibirica. (The Siberian Iris.)—A hardy herbaceous perennial, growing three feet high, with narrow sword-shaped leaves and light blue flowers. There is a variety with white flowers, called *sibirica alba*, which is known also as *I. flexuosa*. The former is a native of Siberia; the latter, also of Germany and Switzerland. It flowers in June and July. There is another variety, called *sanguinea*, (also known as *orientalis* and *hematophylla*;) the young leaves of which are blood red, and the flowers deep blue; it is supposed to come from Siberia, and also China and Japan. A third variety, called *flore pleno*, has double flowers of a purple colour.

Iris sordida. (The sordid Iris.)—A hardy herbaceous perennial, growing a foot and a half high, and flowering in May and June. The colour of the flowers is white.

Iris spathulata. (The spatulate-flowered Iris.)—A hardy herbaceous perennial, growing about a foot high, and producing pale blue flowers in July and August. Native of Germany.

Iris spuria. (The spurious Iris.)—A hardy, herbaceous perennial, growing three feet high. It has long, narrow leaves, and small, light blue and purple flowers, which it produces in June and July. Native of Germany. The leaves emit a disagreeable smell when bruised. The following plants, which have been considered distinct species, rank as varieties of *I. spuria*:—*major*; this grows four feet high, and has large, dark blue flowers; native of Siberia: *ochroleuca*; also grows four feet high, and has very full, straw-coloured flowers: *halophila*; also grows four feet high; the flowers are smaller than the last, and rather deeper coloured; native of the south of Europe: *desertorum*; this grows two feet high, and has sulphur-coloured flowers, suffused with very light blue; they are exceedingly fragrant: native of Russia: *stenogyna*; also two feet high, with small, cream-coloured flowers; probably a native of Germany. They all agree in having leaves which emit a disagreeable smell when bruised.

Iris squalens. (The daubed Iris.)—A hardy, herbaceous perennial, growing three feet high. It has broad leaves and large flowers, the outer segments of which are streaked with brownish blue on light ground, the inner ones a full, dull-blueish brown. It flowers in May or June. Native of the south of Europe. This is very near *I. sambucina*, and is indeed by some regarded merely as a variety of that species.

Iris stylosa. (The long-styled Iris.)—This small and beautiful species has been lately introduced by the Dean of Manchester, who

brought a seed and some roots of it from Mount Rondi, in Cephalonia. The leaves are about a quarter of an inch wide, and grow in a spreading, flat tuft. The large, gaudy blue flowers are supported, like those of a crocus, by a tube, five or six inches long, from the underground root. It is said that some of the steepes of Corfu are in a blaze of blue, from its flowers, in January and February. It remains to be seen whether it will endure the climate of England.

Iris subbiflora. (The purple-flowered Iris.)—A hardy, herbaceous perennial, growing about a foot high, with broad leaves, and large and exceedingly fragrant dark purple flowers. It



Iris subbiflora.

flowers in April and May. Native of Portugal; and a good deal resembling *I. germanica*, but of smaller growth. The name is intended to express a property of throwing up flower-stems at different seasons, spring and autumn.

Iris susiana. (The Chaldeonian Iris.) A hardy herbaceous perennial, growing two feet high, and one of the most singular and magnificent of the whole tribe. The leaves are moderately broad; the flowers are very large, of a greyish-ground colour, streaked and spotted, and veined all over with dark chocolate colour. It flowers in May and June. Native of Persia. Though an inhabitant of a warm climate, it thrives in favourable situations out-doors, succeeding best in a loamy soil, and sunny exposure. It bears forcing well. A few roots should be protected in a frame during winter, in case the weather should be very severe.

Iris tangerica. (The Tangier Iris.)—A hardy herbaceous perennial, growing a foot

high, and bearing blue flowers in June and July. Native of Tangier.



Iris susiana.

Iris taurica. (The Taurian Iris.)—A hardy herbaceous perennial, growing six inches high. The flowers are yellow. Blooms in April and May. Native of Tauria.

Iris tenax. (The tough-threaded Iris.)—A hardy, evergreen, herbaceous plant, growing one foot high, and producing purple flowers from April to July. Native of California.

Iris tenuifolia. (The slender-leaved Iris.)—A hardy bulbous plant, growing a foot and a half high. The flowers are pale blue, and open in May and June. Native of Dauria.

Iris tridentata. (The three-toothed Iris.)—A hardy herbaceous perennial, growing a foot-and-a-half high, and flowering from May to October. The flowers are dark blue striped. Native of North America. Called also *I. tri-petala*.

Iris triflora. (The three-flowered Iris.)—A hardy herbaceous perennial, growing about a foot high; with blue flowers in June and July. Native of Italy.

Iris tuberosa. (The snake's-head Iris.)—A hardy bulbous species, growing a foot-and-a-half high, and more remarkable for its singularity than its beauty. The leaves are quadrangular; the flowers small, dark, dull purple and green, and having a fancied resemblance to a snake's head. It blossoms in April and May. Native of the Levant.

Iris variegata. (The variegated Iris.)—A hardy herbaceous perennial, growing from two

to three feet high. The leaves are rather broad; the flowers medium-sized, yellow and reddish lilac. There are two Belgian hybrids in cultivation; one is called *De Berg*, flowering in May and June; the other, *Van de Will*, flowering in June and July. Both have yellow and brown flowers. The species bloom in May and June. Native of Hungary.

Iris ventricosa. (The bellied Iris.)—A hardy herbaceous perennial, growing about a foot high. The flowers are pale blue, produced in June. Native of Dauria.

Iris verna. (The spring-flowering, or vernal, Iris.)—This is a dwarf-growing, hardy, herbaceous perennial, attaining only a few inches in height, with slender, sword-like leaves, and purplish-lilac flowers, with a large spot of yellow at the base of each of the three broad, expanding segments of the flower. Native of North America. Flowers in April and May.

Iris versicolor. (The party-coloured Iris.)—A hardy herbaceous perennial, growing two feet high. The leaves are broad and short, and the flowers are rather small, and of a reddish purple. It flowers in May and June; and is a native of Virginia, and other parts of North America.

Iris virescens. (The virescent Iris.)—A hardy herbaceous perennial, growing a foot high. The flowers are yellow. Blooms in May and June.

Iris virginica. (The Virginian Iris.)—A hardy herbaceous perennial, growing two feet high, with broad leaves, and dark purple flowers, white at the base, and there showing numerous dark purple streaks; the flowers are highly fragrant. It flowers from June to August. Native of the marshes of Virginia and Carolina. The leaves smell disagreeably when bruised.

Iris Xiphium. (The Spanish Iris.)—A hardy bulbous plant, growing from two feet and a-half to three feet high, with roundish channelled leaves, which are above ground all the winter, and large showy flowers, which in the original species are blue and yellow, but the florists' varieties of this plant, as well as of *I. xiphioides*, comprise nearly all shades of colour. It is called the smaller bulbous Iris, on account of the flowers being smaller than those of *I. xiphioides*. It is a native of Spain, and flowers during May and June.

Iris xiphioides. (The Pyrenean, or English Iris.)—A hardy bulbous plant, a good deal like *I. Xiphium*, but the flowers of this are larger, and it is scarcely so tall growing, and the leaves do not rise till the spring. This is called the English Iris, from the circumstance of its having been introduced to Holland from England, and there distinguished by this name. It flowers in June and July. Native of the

Pyrenees. Of this *Iris*, and between it and *I. Xiphium*, and some allied kinds, there are a great many very beautiful hybrids produced, and in cultivation, varying from white to yellow and purple, through all intermediate shades, and mixed in a variety of ways.



Erica ciliaris.

THE HARDY HEATHS.

THERE are few things in a flower-garden calculated to become so thoroughly interesting as a bed or group of the hardy species of Heaths. There is something about the heaths that always produce pleasing sensations; they are, in fact, great favourites with everybody. And though the species which rank as hardy ones do not, certainly, display such beauties, either of form or colour, as those which are cultivated in the green-house, yet, nevertheless, viewed either individually, or in groups, they possess no inconsiderable amount of beauty; and have, besides, a characteristic distinctness, that renders them truly worthy of a situation in the flower-garden, or, especially, in beds or groups, on the grass lawn.

There is one consideration which especially recommends these hardy heaths to consideration; and that is, the length of time in which a group of them would display their blossoms. Some of the kinds would be more or less in bloom during every month of the year; and those which were not in bloom would, at no period, present a littery or untidy appearance; but, on the contrary, they would present neat compact little bushes, almost as interesting in their foliage and appearance as when embellished with blossoms.

Perhaps, no one family which presents such a variety as may be found among the hardy heaths, is so suitable, and so perfectly adapted in every way for cultivating, with the express purpose of decorating the flower garden, in winter, when the summer flowering plants are removed. Small evergreens, indeed, of any kind, kept in pots, and of a small size and

neat form, are all adapted for the purpose; but the heaths seem to be pre-eminently so, as they are, for the most part, of very limited growth, and may be cultivated for the express purpose, with quite as little amount of trouble as the most common shrubs that could be chosen.

Besides being cultivated in permanent beds, or groups, or for the purpose of filling the flower garden beds in winter, many of the heaths are well adapted for planting as edgings, especially to beds filled with American plants, or others planted in a peaty soil. In proportion to their size, they are well fitted for the extreme edge of beds of the larger growing American plants, where the miscellaneous method of planting is adopted. When planted in groups by themselves, they are better adapted for smaller sized beds. Some of the larger growing species form no mean-looking plants, as single specimens, planted out on the lawn; they are, of course, specimens of the smaller class, but if the situation is suitable, they will become very bushy, and in this state look peculiarly neat on a well-kept lawn. Being themselves small in all their parts, they do not look at all well where the lawn is not kept nicely; for the strong growth of the grass in that case seems, to the eye, to overpower them.

Most of the species are natives of Europe, and several of both species and varieties inhabit our own country, and cover very extensive tracts of land; of the latter class, is the *Calluna vulgaris*, the common ling, or heather, and *Erica cinerea*, the grey heath. Some of the species have a wider geographical range; thus *Gypsocalis vagans*, which is found plentifully in Cornwall, inhabits also the north of Africa; and the common ling is found in Iceland, Greenland, and Kamtschatka, and in Nova Scotia and Newfoundland.

There are few plants, observes the late Mr. Loudon, that are abundant in a state of nature, which man has not applied to a great variety of useful purposes. The most important use of the heath throughout Europe, is as an herbage plant. In all heathy countries, with an imperfect agriculture, cattle and sheep browse on the young shoots in winter and spring, when they can procure no other food. It is true, these shoots are powerfully astringent, and not very nutritious; and they even affect the milk of cows not accustomed to eat them, and turn it red; but they are, nevertheless, valuable for keeping the animals alive till the season of pasture-grass returns. According to some French agricultural writers, the mutton of sheep fed on heath, or upon pastures on which heath abounds, is of a richer flavour, and more nourishing than that which is fed on grass only; and the wool of such

sheep is said to be produced in larger quantities. Heath is used, both in Scotland and Sweden, for thatching houses, for heating ovens, for making besoms, scrubbing-brushes, and baskets; for weaving into fences, for covering underground drains, and for many rural purposes. The Highlanders not only form the walls of their houses, but they make their beds of it. The green tops and flowers of the plants, boiled in water, dye yellow; and woollen cloth boiled in alum-water, and afterwards in a strong decoction of the tops, comes out of a fine orange colour. Sometimes leather is tanned in a strong decoction of heath. Formerly, the young tops are said to have been used alone to brew a kind of ale; and, in some of the western isles, it is said, they still brew ale with one part malt, and two parts of the young tops of heath, sometimes adding hops. The flowers of the heath abound in honey, and are much frequented by bees. The wood makes excellent charcoal. Medicinally, the shoots of the heath are considered to be diuretic and astringent, but they are not now used.

The heaths form the type of one of the most extensive and the most beautiful of the natural orders, namely, Ericaceæ, which, it has been remarked, "contains, perhaps, a greater number of really beautiful plants than all the other orders of flowering plants put together." This, it must be admitted, is strong language, but it seems to convey a correct idea of the superlative beauty of a vast majority of the plants of the order; and it is only necessary to name the genera *Erica*, *Rhododendron*, *Azalea*, *Kalmia*, *Andromeda*, *Arbutus*, *Pernettya*, *Gaultheria*, *Clethra*, *Ledum*, and *Vaccinium*, all containing many hardy species, and the greater part of them entirely composed of hardy plants—not to mention the many splendid tender exotics of the order—to show that the expression is not altogether undeserved.

The different kinds of hardy heaths are included in the three genera, *Erica*, *Gypsocalis*, and *Calluna*, the species of which will now be noticed.

ERICA.

E. arborea, (the Tree-Heath,) is a tree-like shrub, with branching habit, and small, axillary, racemose, white, bell-shaped flowers. It is hardy in favourable situations, and is only killed down to near the ground in severe winters. It grows from five to twelve, and even twenty feet high, according to the situation, though it rarely reaches the latter size in the open air in this country. It inhabits the south of Europe, and flowers from February to May. There are five varieties:—*stylosa*, with a long style; *squarrosa*, with squarrose leaves; *scoparia*, with small green

flowers; *minima*, a smaller growing plant; and *polytrichifolia*. The species is also called *E. scoparia*, *E. triflora*, and *E. procera*.

E. australis, (the southern Heath,) is a handsome pyramidal shrub, growing from three to six feet high, with very numerous, small, purplish-red, bell-shaped flowers. It is one of the most ornamental of the tree-like heaths, producing a profusion of flowers from April to August. Native of Spain and Portugal. It is also called *E. pistillaris*.

E. ciliaris, (the ciliate-leaved Heath,) is one of the most beautiful of British plants. It is rare in England, being found only in Cornwall; and is also met with in Portugal. It is always found in boggy places, and not in dry ground. It forms a low spreading shrub, from a foot to a foot and a half high; the leaves are ciliated, that is, fringed with small hairs; the flowers are in sub-racemose terminal heads, ovate, and pale red, and of considerable size. It blooms from July to September; and is certainly one of the most beautiful of the hardy heaths.

E. cinerea, (the grey Heath,) is a low-growing plant, clothing many thousand acres of waste land in different parts of the country. It has oval pitcher-shaped flowers, in a sort of spike, of a rich deep purple. The leaves usually grow three in a whorl; and the plant varies from six inches to a foot in height. It is the badge of the clan Macalister. There are several varieties:—*atropurpurea*, a dwarf grower, with deep purple flowers; *alba*, flowers white; *pallida*, pale purple; *carlescens*, flesh-coloured; *prolifera*, with proliferous flowers, or flowers turned into branches; and *stricta*, an upright grower. They flower from June to September. It is also called *E. mutabilis*, *E. humilis*, and *E. tenuifolia*, by various authors.

E. codonodes, (the bell-shaped flowered Heath,) is one of the tree-like species; in general appearance, similar to *E. arborea*, but differing in the form of the flowers, which is more truly bell-shaped than in *arborea*. It forms a bush from ten to twelve feet high, blossoming from February to May, "disregarding both frost and snow, being often covered with flowers from top to bottom, and forming a most beautiful object." The flowers are small, and pale rose-coloured. Nothing seems to be known of its history.

E. sicula, (the Sicilian Heath,) is a shrub from two to three feet high, with erect, ovate, downy, red flowers, in terminal umbel-like groups. It flowers in May. Native of Sicily. It requires a slight degree of protection.

E. stricta, (the upright Heath,) is a very neat growing bush, from two to three feet high, with a rigid branching stem, often forming a fastigiate bush, in some instances, though

rarely as high as twelve feet. The flowers are ovate, pitcher-shaped, purplish, in umbel-like terminal groups. It flowers from August to November. Native of the south of Europe. There is a variety called *rubra*, with reddish-coloured flowers. It is also called *E. multicaulis*, *E. corsica*, *E. ramulosa*.

E. Tetralix, (the four-leaved Heath,) is a stouter growing plant than the last, and, in similar situations is rather a larger grower. The leaves are four in a whorl, greyish; the flowers are ovate, purplish, in terminal heads. It is a native plant, and the badge of the clan Macdonald. The varieties are,—*rubra*, with pale red flowers; *carnea*, flesh-coloured; *alba*, white; and *Mackaiana*, a native of Ireland, differing botanically from *Tetralix*, but a good deal like it, to a cursory observer, and is possibly a hybrid between *E. ciliaris* and *E. Tetralix*, having the leaves of the former, and the flowers of the latter. They flower from June to August. Also called *E. botuliformis*, *E. barbarica*, and *E. pumila*.

E. viridipurpurea, (the greenish-purple Heath,) is a bushy shrub, growing about three feet high, and bearing greenish flowers, from May to August. It is a native of Portugal.

GYPSOCALLIS; the Moor Heath.

G. carnea, (the flesh-coloured flowered Moor Heath,) is a dwarf, almost herbaceous plant; and though truly a shrub, yet, from its dwarf compact manner of growth, it accords well with herbaceous plants. The stems seldom rise more than six inches high, and from December to April, the little branches are loaded with the pretty, lively, pale red flowers, which are axillary and drooping, but disposed in dense racemes, directed to one side. It is a native of Germany, Switzerland, and the north of Wales. A plant, called *E. herbacea*, and *E. præcox*, is by some regarded as a variety; but it is scarcely, if at all, distinguishable. *E. carnea* is also called *E. saxatilis*.

G. mediterranea, (the Mediterranean Moor Heath,) grows from four to six feet high. It forms a bushy plant, gaily decorated with its numerous, pitcher-shaped, small, red flowers, disposed like a raceme, and directed to one side. It flowers from March to May. It is a native of the region of the Mediterranean, in the south of Europe; and is found, also, on the western coast of Ireland, covering a considerable tract of land.

G. multiflora, (the many-flowered Moor Heath,) is an erect growing bush, attaining two feet in height. The flowers are axillary, disposed in a racemose-corymb; they are bell-shaped, and pale red. It is a native of the south of Europe. If planted in a cool, airy, open situation, it will grow freely, and com-

mence flowering in May and June, continuing to develop flowers up to November, or December. It is called *E. juniperina*, and *E. pendularis*.

G. umbellata, (the umbel-flowered Moor Heath,) is a slender-growing bush, of two to three feet high, with small purple flowers, in umbels, produced from May to July. It requires slight protection in severe weather. Native of Portugal.

G. vagans, (the wandering Gypsocallis, or Cornish Moor Heath,) is a small dense shrub, growing in large compact tufts, with numerous, small, bell-shaped, purplish-red flowers, which are arranged in an aggregated axillary form, so as to resemble a dense spike. It is a native of England in Cornwall, and of the south of France, and the north of Africa. It flowers during July and August. There are several varieties:—as, *pallida*, pale red, which appears to be the same as that called *rubescens*; *purpurascens*, with purplish flowers; *alba*, with axillary white flowers; and *tenella*, also with white flowers, which are terminal. The species has been, by different persons, called *E. vaga*, *E. didyma*, and *E. purpurascens*.

CALLUNA.

C. vulgaris, (the common Ling, or heather,) is a small spreading shrub, of about a foot high in exposed places, growing plentifully in favourable situations in all parts of Britain, and throughout Europe. The flowers, which are small, are disposed in long, terminal, spicate racemes. It flowers from June to August. In sandy soils, in open woods, it often reaches three feet or upwards in height. The following varieties are enumerated:—*purpurea*, with purplish red flowers; *decumbens*, branches decumbent, flowers purplish red; *tomentosa*, branches woolly, flowers purplish red; *alba*, flowers white; *coccinea*, flowers deep red; *flore-pleno*, flowers double, pale purplish red; *foliis variegatis*, leaves variegated, flowers purplish; *aurea*, leaves variegated with yellow; *atro-rubens*, branches pubescent, flowers deep red; *serotina*, branches pubescent, flowers white; and *spicata*, with very long racemes, red or white. Besides these, there are others less distinct. As a selection where only a few are required, the following may be taken:—*alba*, *coccinea*, *tomentosa*, *serotina*, *foliis variegatis*, and *flore-pleno*.

With the hardy Heaths, must be associated the plant known as the Irish Heath, Irish Whort, Cantabrian Heath, or St. Daboc's Heath. This plant belongs to the genus *Dabœcia*.

D. polifolia, (the poly-leaved Dabœcia,) is a bushy evergreen shrub, growing from one to two feet high, with elliptic flat leaves, and large purple pitcher-shaped flowers, in ter-

minal racemes. It is very abundant on the sides of mountains, and dry heaths, in some parts of Ireland; it is, besides, found on the western Pyrenees, and at Anjou. It flowers from June to September. There is a distinct variety with white flowers, which is no less beautiful than the purple one; and also a dwarf purple, called *nana*. It has been described by different authors under the following names:—*Andromeda Dabœcia*; *Erica Dabœcia*, *E. hibernica*; *Menziesia Dabœcia*; *M. polifolia*; and *Vaccinium cantabrigium*.

Besides the foregoing, the greater part of which are perfectly hardy (the tenderer ones, such as *arborea*, *umbellata*, &c. will survive with the smallest possible degree of protection;) there are many of the Cape species which grow out doors freely in summer, and will also endure a winter of moderate severity: a list of some of these is appended, on the authority of Mr. McNab, of the Botanic Garden, Edinburgh, than whom few persons are better acquainted with this beautiful tribe of plants.

To those who may intend to plant a bed or beds of these plants, the following summary of the hardy kinds, showing which are in bloom during each month, with their height and colour, may be useful.

BLOOMING IN JANUARY.

Gypsocallis carnea. Height $\frac{1}{2}$ foot: pink.

BLOOMING IN FEBRUARY.

Erica arborea. Height 9 feet: white.

Erica codonodes. Height 6 feet: pale rose.

Gypsocallis carnea. Height $\frac{1}{2}$ foot: pink.

BLOOMING IN MARCH.

Erica arborea. Height 9 feet: white.

Erica australis. Height 10 feet: red.

Erica codonodes. Height 6 feet: pale rose.

Gypsocallis carnea. Height $\frac{1}{2}$ foot: pink.

Gypsocallis mediterranea. Height 4 feet: pink.

BLOOMING IN APRIL.

Erica arborea. Height 9 feet: white.

Erica scoparia. Height 5 feet: green.

Erica australis. Height 10 feet: red.

Erica codonodes. Height 6 feet: pale rose.

Gypsocallis carnea. Height $\frac{1}{2}$ foot: pink.

Gypsocallis mediterranea. Height 4 feet: pink.

BLOOMING IN MAY.

Erica arborea. Height 9 feet: white.

Erica scoparia. Height 5 feet: green.

Erica australis. Height 10 feet: red.

Erica codonodes. Height 6 feet: pale rose.

Erica viridipurpurea. Height 3 feet: green.

Erica sicula. Height 2 feet: red.

Gypsocallis mediterranea. Height 4 feet: pink.

Gypsocallis umbellata. Height 3 feet: purple.

BLOOMING IN JUNE.

Erica arborea. Height 9 feet: white.

Erica scoparia. Height 5 feet: green.

Erica australis. Height 10 feet: red.

Erica cinerea, vars. Height 1 foot: white; red; flesh.

Erica Tetralix, vars. Height 1 foot: white; red.

Erica viridipurpurea. Height 3 feet: green.

Gypsocallis multiflora, vars. Height 2 feet: white; red.

Gypsocallis umbellata. Height 3 feet: purple.

Calluna vulgaris, vars. Height 2 feet: white; purple; red.

Dabœcia polifolia, vars. Height 2 feet: purple; white.

BLOOMING IN JULY.

Erica australis. Height 10 feet: red.

Erica ciliaris. Height 1 foot: pale red.

Erica cinerea, vars. Height 1 foot: white; red.

Erica Tetralix, vars. Height 1 foot: white; red.

Erica viridipurpurea. Height 3 feet: green.

Gypsocallis multiflora, vars. Height 2 feet: white; red.

Gypsocallis umbellata. Height 3 feet: purple.

Gypsocallis vagans, vars. Height 1 foot: white; red.

Calluna vulgaris, vars. Height 2 feet: white; purple; red.

Dabœcia polifolia. Height 2 feet: purple; white.

BLOOMING IN AUGUST.

Erica ciliaris. Height 1 foot: pale red.

Erica cinerea, vars. Height 1 foot: white; red.

Erica stricta. Height 2 feet: pink.

Erica Tetralix, vars. Height 1 foot: white; red.

Erica viridipurpurea. Height 3 feet: green.

Gypsocallis multiflora, vars. Height 2 feet: white; red.

Gypsocallis vagans, vars. Height 1 foot: red; white.

Calluna vulgaris, vars. Height 2 feet: white; red; purple.

Dabœcia polifolia, vars. Height 2 feet: purple; white.

BLOOMING IN SEPTEMBER.

Erica cinerea, vars. Height 1 foot: white; red.

Erica stricta. Height 2 feet: pink.

Gypsocallis multiflora, vars. Height 2 feet: white; red.

Dabœcia polifolia. Height 2 feet: purple.

BLOOMING IN OCTOBER.

Erica stricta. Height 2 feet: pink.

Gypsocallis multiflora, vars. Height 2 feet: white; red.

BLOOMING IN NOVEMBER.

Erica stricta. Height 2 feet: pink.

Gypsocallis multiflora, vars. Height 2 feet: white; red.

BLOOMING IN DECEMBER.

Gypsocallis carnea. Height $\frac{1}{2}$ foot; pink.

The following species of Cape Heath, as well as many others, will, according to Mr. McNab, endure in the open air seven or eight degrees of frost (Fahrenheit's scale) without suffering in any way, provided the situation be dry, and the soil properly drained. Planted on a sheltered border near a wall, appropriated to half-hardy plants, they may be expected to succeed to satisfaction.

Erica actæa. 2 feet: May & June; purple.

Erica acuminata. $1\frac{1}{2}$ foot: July to October; red.

Erica aggregata. $\frac{5}{8}$ foot: July; purple.

Erica campanulata. 1 foot: April to August; yellow.

Erica comosa. $\frac{5}{8}$ foot: April to August; red.

Erica conferta. $1\frac{1}{2}$ foot: February to October; white.

Erica congesta. 1 foot: June and July; white.

Erica cruenta. 2 feet: May to September; dark red.

Erica cypripedifolia. 1 foot: April to June; pale red.

Erica curviflora. 2 feet: July and October; yellow.

Erica diaphana. $1\frac{1}{2}$ foot: June and July; pink.

Erica exulans. $1\frac{1}{2}$ foot: October and November; red.

Erica ferruginea. 1 foot: May to July; red.

Erica globosa. $1\frac{1}{4}$ foot: July to September; pink.

Erica gracilis. $\frac{5}{8}$ foot: February to June; purple.

Erica grandiflora. 3 feet: May to September; yellow.

Erica hyacinthoides. 1 foot: June to August; pink.

Erica ignescens. $1\frac{1}{4}$ foot: March to June; red.

Erica intertexta. $1\frac{1}{2}$ foot: June and July; yellow.

Erica leucanthera. $\frac{5}{8}$ foot: June to May; white.

Erica longipedunculata. 1 foot: July and August; pink.

Erica lucida. 1 foot: April to June; pink.

Erica mammosa. 2 feet: July to October; purple.

Erica margaritacea. $1\frac{1}{2}$ foot: May to September; white.

Erica nigrita. $\frac{5}{8}$ foot: March to June; white.

Erica pendula. $1\frac{1}{2}$ foot: June to August; purple.

Erica perlata. 1 foot: March to August; purple.

Erica pubescens. $1\frac{1}{2}$ foot: February to December; purple.

Erica rumentacea. $1\frac{1}{2}$ foot: June to December; dark red.

Erica setacea. $1\frac{1}{2}$ foot: February to April; white.

Erica tenuiflora. $1\frac{1}{2}$ foot: April to June; light yellow.

Erica triflora. $1\frac{1}{2}$ foot: March to June; white.

Erica ventricosa. 1 foot: April to September; flesh colour.

Erica verticillata. 3 feet: July to October; scarlet.

Erica virescens. 1 foot: January to June; greenish.

Besides these, there are doubtless many others possessing a considerable degree of hardiness. In fact, the whole family scarcely ever require fire-heat to be applied to them: they are just the sort of plants to introduce into those plain glass portable erections, which we may now expect to become common.

CULTIVATION AND PROPAGATION.

THE culture of the hardy Heaths may be assimilated with that of what are generally called American plants; for like these they thrive best in a soil composed chiefly of peat-earth; and if they are situated in a position where the soil will be kept both cool and moist during summer, without being subjected to excess of wet in the winter, their success will be the more certain and complete. These two features may be regarded as the leading principles of their cultivation.

Wherever a bed of peat-earth exists, there the Heaths may be introduced; and if the situation is generally suitable for plants of this particular class, the Heaths will also flourish. Generally speaking, their small size particularly adapts them to such situations as the margins of large elumps where a miscellaneous collection is planted; and indeed, from the smallness and particular character of their foliage, they require to be brought forward, or they become overpowered by the broad and ample leaves of such shrubs as rhododendrons, &c. Where, however, the space can be afforded, they are better planted in a group by themselves; and an extension of the same principle, so far as to plant each kind in a bed by itself where space can be afforded, will, on the whole, be found to be the most pleasing. When collected together in groups, whether it be of individual kinds, or as a miscellaneous collection, they appear to harmonize better, than when mixed with other shrubs: their needle-like foliage does not, by any means, accord with the broader and more expansive leaves which most other shrubs possess.

An assemblage of the hardy kinds of Heaths separate from any other plants, constitute an hardy Ericetum, or Heathery: when the different kinds are brought together, within the scope of one bed or clump, they form a hardy Ericetum on a very limited scale; but when a greater number of small beds are brought together, each being filled with a particular

kind only, a hardy *Ericetum* on a large scale is constituted; and it will be found to be a very interesting and ornamental appendage to a pleasure-ground. Of course the principles of cultivation are the same in either case; and, therefore, in entering somewhat into detail, on the arrangement and management of an *Ericetum*, when made as complete as it will admit of, the same remarks on cultivation will apply when the *Ericetum* is confined within the smallest possible limits.

In the majority of cases, the principle already referred to, of placing the plants in a situation where they will have the advantage of a cool moist soil, will be most effectually secured by making the bed, or beds, in some part of the garden which is below the ordinary level of the ground; this, of course, supposes every part of the ground to be well drained so that there may be no stagnant water. Wherever the soil is naturally moist, and not so perfectly drained as it would admit of, there is no necessity for choosing a low situation for these plants; and, indeed, under such circumstances, a low situation would very probably be inappropriate. On the other hand, if the situation is naturally dry, or is made artificially so by draining, there will be an advantage in placing the beds in the lowest part of the ground that can be chosen. If the place is sufficiently extensive to admit of being laid out in a picturesque manner, with a variously undulated surface, presenting in some parts hollows or depressions, forming dales of some extent, there cannot be a better place chosen for the purpose under consideration, than is afforded, either by the lowest points or the sides of the depression. In other cases, where the ground is disposed in a formal manner, or where some detached spots can be devoted to a formal arrangement of them, the surface of the area in which they are to be grown, may be sunk from one to two feet, according to circumstances, below the ordinary level. The space may be either in the form of a square, a parallelogram, an oval, a circle, or any other that may be convenient for the situation, or adapted to the fancy of the proprietor; it should be made into a level grass-plot, with sloping grass banks, connecting it with the higher ground; the beds for the plants should be formed on the level part, and they may be of any form that may be preferred; generally round, or roundish clumps have a better effect than angular ones, as the latter cannot so well be filled out with plants. This little area, the hardy *Ericetum*, should of course be approached by a gravel path, connected with the other walks of the pleasure-ground, and a gravel path should extend round the area, the sloping part being descended by means of a flight of steps; this is necessary for the enjoyment of the

spot, both in wet weather and in winter, when it would be impracticable to walk on the grass; and as some of these at least might be expected to bloom throughout the winter, and in the early spring, when flowers in the open air would be very rare indeed, the circumstance just noticed is particularly worthy of attention. The higher ground adjacent may be planted round with flowering shrubs, such as *Rhododendrons*, *Azaleas*, &c., so as to screen the sunk portion altogether from the eye until it was approached; or the top of the bank may be left quite bare and exposed—just as the taste or fancy of the proprietor may dictate. It may just be remarked, that in cases where the extent of the *Ericetum* is at all considerable, the former plan is preferable; and it is the principle upon which detached flower-gardens or parterres should be made: they should be approached by a stranger without any knowledge of their existence, until they came at once within view.

The manner of forming the beds should be something like the following:—The area should be drained or not, according as the situation may or may not require it; this should be first attended to: then, after forming out the beds on the ground, remove the original soil to the depth of two feet; in the bottom, place six inches of some open coarse material, such as brick-rubbish, to act as drainage; and on this, fill in the remainder of the space with a mixture of three parts fibrous peat, and one-third sandy loam, giving the beds a little elevation in the centre, and regulating the soil at the margin to about two inches below the turf. The soil should be made moderately firm, and the beds will then be ready for the plants, which should be put in at such a distance apart, as is about equal to the height they are expected to attain. Occasionally, at intervals of some years, as the plants may become too much crowded, they should be taken up and re-arranged, giving them a greater space to grow in. This is all the attention they require, with the exception of such ordinary and routine operations, as keeping down weeds, watering in very dry weather in summer, removing decayed portions, and faded flowers, seed-vessels, &c. An open airy situation is preferable for the beds. In winter, the plants can hardly be kept too dry.

When planted in a bed by themselves, the species which have already been referred to, as scarcely so hardy as others, though capable of enduring mild winters, might be very easily and securely protected, by covering the soil when dry with a coating of three or four inches of dry sawdust, and placing over the plants a temporary shelter of asphalted felt, left open at the sides, but so arranged as to throw off the rain from the plants, and to keep

both them and the soil in a state of comparative dryness, under which circumstances, the frost will have far less influence on the plants. Many plants besides Heaths, which are destroyed when left exposed to the rain and moisture, might be preserved without injury if this plan or some similar one were adopted to keep them in a dry state. Such a covering would by no means deprive a plant of light, and might therefore be suffered to remain until all danger from frost was past, which would perhaps be by the end of March, either earlier or later, according to the season. The covering of sawdust should not be removed altogether at once, or the roots will be paralysed by exposure to cold; an inch or two should be removed at a time, and the whole cleared away by the middle of April.

By means of protection similar to that referred to above, it is probable that the greater part of the Cape Heaths would survive through the winter, without sustaining any material injury; and than a collection of exotic Heaths, growing in all the luxuriance of nature, and blooming as profusely as they show themselves capable of, even under artificial cultivation, it is scarcely possible to conceive a more beautiful assemblage.

The hardy heaths are most readily propagated by layers, which make the best plants within a limited period, although cuttings root freely enough with careful management. If the young branches are brought down, and covered to within a few inches of their tops, with about an inch in thickness of the soil, kept firm and moist, they will usually become rooted plants in a few months, and may then be taken off, and transplanted to where they may be required. Either the spring or the autumn is the most eligible time for doing this: in the former case, they are best taken off early in the autumn, and in the latter, during the spring months.

There is one purpose to which a reserve stock of the winter-flowering hardy Heaths may be appropriated with every advantage; and that is, the decoration of the sitting-room, the conservatory, or the green-house. *Gypsocalis carnea* especially will continue in bloom nearly all the winter, and at that period, flowers of any kind, except forced ones, are very scarce. A few small neat bushy plants, taken up, and carefully placed in pots, just before severe frost comes on, and then set in any sheltered corner, or in a cold frame, will come in about the usual season; if they were required, their blooming could be accelerated a month or so, by taking them up earlier, and keeping them under shelter. What is now referred to, is very different from what is called forcing; in fact, the ordinary period of their blooming out-of-doors, (December and

January,) is the very time when they would be most useful for in-door decoration, because it is just the time of the greatest dearth of flowers. From the peculiar manner of their rooting, namely, in close dense masses (technically called balls) of fine fibres, they are very easily removed, and potted without sustaining any injury from the operation. Plants so treated, should be planted out again in the reserve ground, early in the spring, in order to make a new growth, and prepare themselves for a similar process in the following season.

MR. BICKES' DISCOVERY OF THE WAY TO GROW CORN WITHOUT MANURE.

THE astounding announcement of a mode of growing crops without manure, has interested many persons who are, nevertheless, sceptical, and ourselves among the number; and, on looking to a number of certificates signed by well-known persons, who depose to their actual observation of extraordinary productions, under still more extraordinary circumstances, we are struck with astonishment; for, unless mendacity and forgery have been practised to an extent almost beyond all bounds, grain has been produced, in abundance, on land which no ordinary manuring could make fertile; indeed, on the moving sands beside a fresh-water river, as well as on gravel and sand. Astounding as are the samples and certificates that we have seen, the means by which these agricultural miracles have been performed, are admitted to be preparations of the seed only. Now, this brings us to a principle which we can all understand; and once admit a principle to be tangible and feasible, and who shall set a limit to its power and extent? We all know, at least by far the most of us know, that, by steeping a seed, we can influence the after plant. Admitting that this fact is reducible any day to practice with a never-failing result, however trifling the difference may be in the steeped and unsteeped seeds, even if steeped in water only, we have, then, only to give credit for a discovery of some new mode of steeping, or new matter to steep in, to account for much greater results. Without, therefore, presuming to contradict a man who is alleged to have been trying nearly twenty years to perfect his discovery, we will give some few particulars as to what is said to have been done by this gentleman, in different parts of the world, Mr. Bickes having done nothing in the matter but prepared and sown the seed.

Cert. 1. "In the Imperial Garden at Der Burg, the sowing made by Mr. Bickes consisted of wheat, barley, and maize; on the 24th June—1st. The wheat was flourishing;

that from the prepared seed had finer ears, and also a greater number of grains, than those of the unprepared seed. 2d. The barley: every ear of the prepared seed bore four columns, and more than double the number of grains, while the ears of the unprepared barley had only two columns, and less grain in every column. 3d. The plants of the prepared maize were infinitely finer than those that had not been prepared. *Certificate dated Vienna, June 24, 1829, and signed—STEININGER, ZITTEL, SCHISKA.*"

Cert. 2. "The undersigned affirm, that on having examined the grain and after-mentioned plants prepared by him, on comparing them with those sown in the same field, but unprepared, they found—1st. That the hemp was higher, and the branches better furnished with seed. 2d. The Turkish wheat had more ears. 3d. The buck-wheat was more than three feet high, and full of grain. 4th. The wheat, rye, barley, and oats, had finer and a greater number of columns, larger ears, and were better furnished with grain. 5th. The clover was beyond comparison finer, and better furnished with shoots, and with roots two or three times as thrifty. The disk of the sunflower was more than double the usual diameter; the red cabbages had finer heads; the cauliflowers fuller flowers; the cranes-bill and cucumbers were much richer, and yielded abundant fruit; while those, where the seed had not undergone the preparation, only yielded a few stunted plants; the fruit rotted and fell off. *Certified at Vienna, October 9th, 1829, by JEAN NEP RIETHOFER, and others.*"

These show that the attempt was made in 1829, and, to some extent answered the purpose. Among a number of certificates, we will select one of the produce of this invention, in 1842; in which it is declared that—

Cert. 11. "The undersigned testify to having examined the crops treated by the discovery of Mr. Francis Bickes without manure, both in fields and gardens, consisting of oats, barley, spring and winter wheat, maize, potatoes, ryegrass, white and red clover, Lucerne, Swedish clover, flax, hemp, millet, and *Madia sativa*. 1st. A field much mixed with sand, and so exhausted that the proprietors had not been able to cultivate it, was sown with wheat, which succeeded so well, that it equalled and even surpassed the produce of other fields of good soil and manured as usual. 2d. Four acres, called Rabenberghold's ground, were sown with oats and barley, two acres each. This field was in such a state of exhaustion that the proprietors offered it gratuitously to Mr. Bickes. These crops were much finer than those of the surrounding fields. 3d. The field sown with maize was of a varied and sandy bottom, and, in the memory of man, had never

received the least manure; but in no place do we find maize in such a flourishing state, not even in fortunate years or in manured fields; each plant bears three, four, and five stems, with as many or more ears on each stem. 4th. In the district called the Garden, the soil is stony and indifferent, and until now has only been hoed; but all here flourished with extraordinary vigor, such as is seldom seen even in the best years. Mr. Bickes offered a Prussian dollar to each and every person who could show him finer grain from the most fertile and well manured ground. It is worthy of remark that the barley contained many more grains in each column, and many plants bore forty-five stalks. Wheat was so productive that the chaff-cap enclosed four and even five grains each. It was not uncommon to see potato plants with thirty stalks. The maize had generally four or five stems, and each stem a corresponding number of ears: one plant bore fourteen ears, and another six ears on the principal stem. In the garden was a ditch filled with sand from the Rhine, which Mr. Bickes planted with vines, one stalk of hemp and one plant of potato, and he also sowed barley and spring wheat. The whole presented extreme vigor, such as was not equalled in the best fields. The hemp had obtained the height of ten feet, and was still growing. The wheat contained four and five grains in each chaff-cap. The oats produced, in one plant, twenty-six stalks, and the ears in equal abundance. The results of this year, as well as the preceding, are such that, notwithstanding the unheard-of drought of this year, they have removed from amongst the inhabitants of our community the least doubt of the value of Mr. Bickes' discovery, and that it possesses powers which no manure has ever attained, even in good years, and with the most fertile grounds. Thus our testimony is given out of respect to the truth; and in faith of it we subjoin our signatures.—LORGE, B. BÜSCH, JUN., PAUL HOFEL, Land Proprietors. *Castel, 20th August, 1842.*"

It would be useless to multiply certificates; they fully bear out all that has been said of this gentleman's inventions; and all we wish to affirm here is, that with such evidence before us, and placed in such official shape, it would be an act of insanity to reject any proposal for a fair trial; and we are glad to see that many influential farmers are putting Mr. Bickes to the proof, by giving him an opportunity of sowing portions of their own land with prepared wheat. Mr. Bickes now offers to sow spring and garden crops for any one who will go to the expense; and those who, feeling a deep interest in the advancement of our means of growing corn, that neglect this challenge, will have much to answer for. We

repeat that there is extensive forgery and fraud in this matter, or a wonderful discovery; and the open, straightforward manner in which Mr. Bickes enters upon the trial, with a certainty that failure would ruin his hopes before he can have profited a shilling, disarms one of all desire to attribute unjust motives. We have seen the certified samples of many kinds of plants and grain, and certainly they bear out, in all respects, the explanations of Mr. Bickes himself, who is intelligent and communicative without any appearance of reserve. His invention is worth buying, even as a national matter; and, as is usual with all successful men, he is menaced by pretenders who assert they have found out the grand secret, and are now endeavouring to supplant him, and take in the public. We ought to have observed that the cost of Mr. Bickes' process is about 3s. per acre.

THE WEATHER OF 1845, AS IT AFFECTED THE GARDEN.

It appears to me that the gardener is so dependent upon the weather for the complete success of his operations, that it should form a part of his education to make such observations upon the changes of this fickle climate as would enable him to foresee the proper time for covering up his frames; and I have no doubt that, not only many a valuable plant would then be saved, but many a hundred-weight of coals also, which are uselessly consumed in the fires of the green-house on nights when a fire is not only totally unnecessary, but absolutely prejudicial. A really useful knowledge of the weather can only be obtained by constant observations, continued for many years; and therefore I think every one who keeps a gardener, and every one who professes to instruct young men in the art of gardening, should make it a part of the gardener's duty to keep a regular series of observations, as these would soon enable him to know when protection is absolutely necessary, and when it may be dispensed with, to the advantage of the plants under his care. The Russian gardeners sleep in the garden, under a mat, having their feet exposed to the weather, so that as soon as the frost attacks their toes they are warned that it is likely to be attacking their plants also. Such a rude method of making observations is not necessary in a country where the gardener receives a good education: but unless he uses that education to a good purpose, the poor plants would be better off under the care of the ignorant Russian serf, than under that of the half-educated, free-born Englishman. A thermometer and a barometer, therefore, should be considered as necessary for a gardener as any other of his tools.

The changes of the barometer need not be recorded, for they are nearly identical all over the country. The main use of such an instrument is that of corroborating or contradicting the probability of the changes which the clouds or the direction of the wind would seem to portend; for we may have starlight nights without frost, and cloudy nights which may end with a frosty morning, each of which indications are likely to be wrongly acted upon, unless the gardener is possessed of instruments which can point out to him the real state of the atmosphere. As to the thermometer, I have already, elsewhere, so fully insisted upon the advantages of observations of that instrument, that I need not here say more concerning it, but will at once proceed to carry out the intention of this communication, and put on record my observations on the weather as it affected the garden in the past year; and in doing so, I will attend more to the dates of the remarkable parts of the weather, than to the mere technicality of numerical results. And first, as to the temperature of 1845, the following table will throw some light upon this important feature of the weather:—

	Lowest.		Highest.	
	Deg.		Deg.	
Jan.	3.0	on the 31st	51.0	on the 25th
Feb.	11.4	" 1st	51.0	" 26th
March	14.0	" 20th	54.0	" 22d & 23d
April	22.0	" 12th	64.5	" 21st
May	26.5	" 6th	61.5	" 16th & 31st
June	39.5	" 26th	73.5	" 12th & 14th
July	40.0	" 15th	70.0	" 21st
Aug.	41.0	" 21st	68.0	" 30th
Sept.	24.0	" 23d	71.0	" 1st
Oct.	28.0	" 5th	59.5	" 13th
Nov.	19.0	" 23d	56.0	" 6th
Dec.	16.0	" 13th	50.8	" 29th

It will be seen that the lowest point to which the mercury in the thermometer fell during the past year was 3 degrees, or 29 degrees below freezing point. This is lower than the lowest point in 1844, which was 9 degrees, and lower than any of the preceding ten years, except 1841, when the temperature fell to 2 degrees. In 1838, the lowest point was 6 degrees. But notwithstanding the lowness of the temperature on this particular night in January, the mean temperature of the whole month is above that of both February and March, as may be seen on reference to the Table of Mean Temperature, given hereafter. It will be seen also that the highest degree of heat occurred on the 12th and 14th of June, and that 73 degrees is the highest point to which the mercury in the thermometer rose during the past year. This is remarkable, as being a lower maximum than has occurred in any of the ten preceding years, and as having occurred in June; for during the ten preceding years the maximum of the year has occurred

only twice in June, while it occurred five times in August, twice in July, and once in May (1841). The week in which this maximum occurred was, it will be remembered, the only hot week, the only approach to summer, we had during the past year; and the mean temperature of the month shows that subsequent to that month we had no increase in heat. In other years the mean temperature of both July and August is considerably above that of June. The mean temperature of the year, viz. 46 degrees, is a degree higher than that of 1844, and is the same as that of 1836 and 1838. It is lower than any other of the ten preceding years. The following Table will show the mean temperature of 1845, and of each of the preceding five years:—

	1845.	1844.	1843.	1842.	1841.	1840.
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
Jan.	36.0	38.1	37.6	33.2	34.0	39.6
Feb.	32.6	33.5	35.2	40.1	38.2	38.5
Mar.	34.7	38.3	42.6	44.0	46.3	41.7
April	48.9	46.9	44.9	47.6	46.2	50.9
May	48.6	49.9	47.2	54.3	53.9	52.1
June	58.1	54.2	51.5	58.5	56.9	56.9
July	58.2	55.6	56.9	57.9	57.4	56.6
Aug.	56.1	58.1	60.2	61.5	58.7	60.6
Sept.	53.7	55.8	57.6	57.5	56.0	52.3
Oct.	49.6	47.1	44.2	44.5	44.1	47.0
Nov.	40.0	40.8	41.0	39.6	37.5	43.0
Dec.	36.9	31.8	45.2	44.6	39.3	37.8

The number of nights on which the temperature has fallen to or below the freezing point, during the past year, is very great, namely, 133. In 1844, there were 95 such nights; in 1843, 61; in 1842, 58; in 1841, 70; and in 1840, only 49. Thus in 1845, there were 38 more frosty nights than in 1844, which again has a greater number than any of the four preceding years. The increase of frosty nights is easily accounted for, when we remember that there were 23 such nights in the month of March last, and 25 in the month of February. Indeed it is a remarkable fact that between the 29th of November, 1844, and the 21st day of March, 1845 (a period of 112 days), there were only 18 days not frosty. As this is an important feature of the weather, as respects the gardener, it will be well to give a detailed Table of Frosty Nights:—

	Frosty Nights.
Jan. Every night except 5th, 6th, 7th, 8th, 11th, 14th, 18th, and 22d to 26th. . .	19
Feb. Every night except the 3d, 13th, & 16th . . .	25
Mar. Every night except the 3d, 10th, 22d, 23d, 27th, 28th, 29th, and 31st . . .	23
Apr. On the 2d to 7th, 9th to 13th, 16th, 17th, 20th, 21st, 23d, 24th, & 25th . . .	18
May On the 5th, 6th, 9th, 11th, 14th, 18th, 20th, 30th, and 31st . . .	9
June None	0
July None	0
Aug. None	0
Sept. On the 2d, 23d, 24th, and 25th . . .	4
Oct. On the 5th, 6th, and 26th	3

	Frosty Nights.
Nov. On the 1st, 2d, 3d, 5th, 11th to 15th, 21st to 25th, and 30th	15
Dec. On the 3d, 4th, 7th, 8th, 10th, 12th, 13th, 14th, 18th to 22d, 24th, 27th, 29th, and 31st	17

So much, however, depends upon locality for these indications of frost, that the above table can be said to represent little more than the temperature of a particular part of my garden; as I have frequently known the difference between a thermometer placed at the foot of the garden wall, and one hung against the house, to be as much as 10 degs. in severe weather. It must be noted, also, that out of the 17 frosty nights in December, scarcely more than two or three produced ice, so momentary had been the fall of temperature, during most of the nights. December was, perhaps, one of the coldest months to the feeling that we have experienced for some time, although the mean temperature, as exhibited by the thermometer, is not much lower than usual. The effects of the low temperature, in January, February, and March, will be long remembered; for, from the almost total absence of snow to protect the plants, and the very great difference between the temperature of the nights and that of the days, (in the sun, frequently as much as 39 or 40 degs.,) such a trying season for vegetables and shrubs has scarcely been known. Such a scarcity of vegetables, as there was in the London markets, has not been experienced for the last nine years.

With respect to such other details of the weather as are of interest to the gardener, the following table will exhibit the results in figures:—

	Clear days.	Cloudy days.	Wet days.	RAIN. 1845.	1844.
January	—	12	19	1.414	2.234
February	2	14	12	0.981	1.414
March	3	7	21	1.882	3.152
April	11	7	12	1.042	1.664
May	—	14	17	1.068	0.369
June	3	10	17	2.982	2.708
July	—	11	20	2.191	4.180
August	1	12	18	4.254	3.647
September	—	14	16	3.180	4.693
October	—	10	20	5.691	2.583
November	—	13	17	2.602	1.356
December	—	10	21	3.993	0.234
Total, 1845	21	134	210	31.280	28.234
Total, 1844	21	147	198		

And we find from this table that the wet days of 1845, are 12 more than those of 1844. The clear days are the same in number. The quantity of rain in 1845 exceeds that in 1844, by three inches, but is only the tenth of an inch more than the average of the preceding 10 years. Nearly 22 inches fell in the last six months of the year, leaving only 9 inches

for the first six months, which is less than fell in the last *three* months, by 3 inches. Up to the arrival of the Potato disease, in the beginning of September, there had been no excess of rain—rather the contrary. October was a particularly wet month, and on the second and third days of that month there fell upwards of an inch and three quarters of rain in twenty-four hours—a quantity quite unparalleled in this latitude. It was the wettest October on record, the nearest approach to it being in 1804 and 1841.

The consequence of the wet autumn, was a difficulty in getting Potatoes properly housed, and in obtaining seeds from Dahlias, and from Asters and other annuals. In this part of the country no seeds were saved this year, which have any chance of germination. The planting of Tulips was also delayed very much beyond the usual time, from the same cause; and out-door work in general was found to be quite impracticable for many weeks together. In other respects, the effects of the weather have not been more remarkable, probably, than in other years. Still there is a difference of effects in each year, and, in 1845, the spring flowers were late in blooming, the fruit blossoms late in appearing, the fruit late in ripening; succession crops, such as peas, &c. slow in following each other; and this was remarkably the case with gooseberries and plums. In this neighbourhood the Dahlias had scarcely got into good flower, ere they were damaged by the frost; and some annuals, which in former years bloomed very freely, scarcely struggled into a single flower. On the other hand, we had a great abundance of fruit and vegetables, and were thus enabled to pick up some small crumbs of comfort, even during the dark year that is past.

JOSEPH ATKINSON.

Harraby, Carlisle,
Jan. 1846.

THE DOMESTICATED ANIMALS OF THE BRITISH ISLANDS.*

It may, at the first blush, be rather unexpected to find a review of a work of this description in a book devoted to the garden; but there is a good deal more connexion between the general objects of this *Magazine*, and Mr. Low's volume, than at first appears. There are few gardens of any vast importance which have not the usual attributes of a gentleman's establishment, paddocks, parks, common-rights, a small farm-yard, and the usual inhabitants, and especially cows and pigs,

while the park has its proper number of animals to feed it off in season, and stables well peopled—we were going to say, but at all events, occupied with a horse or two. In short, suppose there were not half that we have mentioned, no one ought to keep a single animal of any kind, whether for use or ornament, without knowing something of its nature and general habits, and Mr. Low's is a book for all men. But we confess we were more especially induced to notice it, in consequence of the affinity which exists between the author's notions of breeds and races, and our best writers' opinions on the hybridisation of plants and flowers. The similarity in the effect of crossing subjects of various properties in plants and animals is so great, as to induce us to quote the author's introductory remarks. For, after showing clearly the necessity of our becoming acquainted with the distinct characteristics of races, or breeds, and of adapting the breed of any animal to the circumstances in which it is to be placed, he proceeds to show the evil of rearing such as cannot thrive on lands and in counties where others would succeed. He observes, that, by rearing, for instance, a breed of large and delicate oxen in a country unsuited from its natural and artificial productions, to maintain it, we incur the hazard of loss in various ways; while, on the other hand, by rearing an inferior breed in situations where one of greater value could be maintained, we deprive ourselves of the profit which the natural or acquired advantages of our situation present. So, indeed, is it with plants, as all gardeners, professional and amateur, must know; for one will flourish where another would starve and die. A dear crop on unsuitable land would be a total loss of quantity; and to grow a cheap crop on land that would carry a dear one, is a loss of quality. In either case, there is an evil which, to be remedied, only requires that the tiller of the ground should know what it would produce best and cheapest, and brings the most money. Mr. Low says:—

“An error of another kind is the subject of constant observation, the result likewise of imperfect knowledge of the distinctive characters of breeds. For the procuring of a breed adapted to the situation in which it is to be reared, two general methods may be pursued; either a new breed may be substituted for that which exists, or the old one may have its characters modified or changed by crossing with other races. There are many cases in which scarcely an error can be committed in our practice in these respects, provided we resort to a really superior race; but there are many other cases in which a change of this kind may be injurious, or attended with doubt-

* “On the Domesticated Animals of the British Islands.” By DAVID LOW, Esq., F.R.S.E. London: Longman, Brown, Green, and Longmans. 1845.

ful benefit. Animals become gradually adapted to the conditions in which they are placed, and many breeds have accordingly become admirably suited to the physical state of the country in which they have been naturalized. Thus, the West Highland breed of cattle has become suited to a humid climate, and a country of mountains; the beautiful breed of North Devon, to a country of lower altitude, and milder climate. In these, and many cases more, an intermixture of stranger blood might destroy the characters which time had imprinted on the stock, and produce a progeny inferior in useful properties to either of the parent races. Not only have individual breeders erred in the application of this kind of crossing to practice in particular cases, but several entire breeds have been lost, which ought to have been preserved. There are many breeds, indeed, so defective in themselves, that time and capital would have been lost in endeavouring to cultivate them; but not a few, as will be seen in the sequel, might have been improved to the degree required, by mere selection of parents, and attention to the known principles of breeding.

"Not only do animals become adapted in constitution, temperament, and habits, to the situations in which they have been naturalized, but characters communicated by art, become permanent by continued reproduction. Thus, in the case of the dairy breed of Ayrshire, by breeding from females that possess the property of yielding a large quantity of milk, a peculiar breed has been at length formed, exceedingly well suited to the purposes of the dairy, and at the same time hardy and fitted to subsist on ordinary food. Now, such a breed might be injured, and not improved, by crossing even with a race superior to itself in many properties. Thus, a cross with the Durham or Hereford breeds, would produce animals of larger size, and superior fattening properties, to the native race; but even in these properties, the progeny would be inferior to either the Herefords or the Durhams, and inferior, as a hardy race of dairy cattle, to the Ayrshire breed itself. Hence, the crossing of a breed of cattle with a race apparently superior, will not always be attended with ultimate good; and caution and knowledge of the end to be arrived at are required even in the cases where the good seems most easily attained."—Pp. vii.—ix.

All of which, if the names of the animals were altered to plants, would be as appropriate as if written for them; because, it is only by observing the qualities, of most value, that we can appreciate the benefits of crossing. Thus, the hardy *Rhododendrons* are very common in appearance, compared with those

from warmer climates; and practice has taught us that the constitution of the plant raised from seed takes mostly after the female; so that, the only way to procure handsome flowers on the hardy kind, is to fertilize the hardy plant which is to bear the seed with the tender one, which may impart richness of flower, and thus obtain plants adapted to their situation with a distinct improvement. But the author gives us a further lesson in his *Introductory Observations*, and it applies as much to crops as to animals. He says—

"Another error of a different kind, but proceeding likewise from imperfect knowledge of the relative value of breeds, prevails to a great extent. Breeds, in themselves bad, are obstinately retained in districts fitted to support superior races. In every part of the kingdom, we see breeds which are unworthy of being preserved, while the easiest means are at the command of the farmer of supplying their place by others suited to the locality. Thus, over the greater part of Wales, there are races of wild diminutive sheep, which, in economical value, can bear no comparison with those which could be supplied from other places. In Kerry, and other mountainous districts, stretching along the western coast of Ireland, in place of such sheep as the country could maintain, are to be seen assemblages of animals of the size of dogs, and as wild as antelopes, neither having wool fitted to the manufactures of the country, nor being capable of fattening to any size. Even in the heart of Yorkshire, as we shall see in the sequel, a breed of sheep is preserved, covering a considerable tract of country, which, from its coarseness of form, and inaptitude to fatten, ranks in the lowest class of cultivated sheep in England; and in every part of the kingdom, we may see examples of the vast public and private loss which results from unacquaintance with the relative value, and economical uses of the different breeds of our domesticated animals."—Pp. ix. x.

And now comes a lesson for all who have anything to do with land, many of which know not its value, and still more form no adequate idea of its importance. It should be read and remembered:—

"To remove the causes of mistaken practice, in a branch of industry so important to the interest of producers and consumers, may be regarded as matter of national interest. From the produce of live-stock in this country, a large part of the subsistence of the people, of the materials of our manufactures, of the profits of the farmer, and of the revenue of the landholder, is derived. In many parts of the kingdom, tillage is difficult, or impracticable, and the only valuable production is

live-stock; and it is not too much to assert, that half the rental of the British islands is derived from this source. These considerations will make it appear, how much the study and advancement of this department of rural economy merits the attention of those who seek to widen the channels of native industry."—P. x.

The splendid work, of two volumes, published long since by Mr. Low, illustrated with beautifully drawn and coloured plates, was, in letter-press, inferior to the present volume. It did not contain the natural history of the dog, and the subject matter of all the other animals is enlarged and improved. The Introduction, so called—for the preface from which we have already quoted is quite of an introductory nature—gives us "the divisions of the animal kingdom," and the "properties of the external form," written with a clearness and perspicuity not often observable in papers so purely philosophical. This alone is very interesting to the lovers of Natural History. The author then goes into the nature, species, and varieties, of the goat, and the sheep, of which we have the characteristics of twenty-one different breeds—for the author does not clog his book with trumpery distinctions of questionable species, but treats them all as breeds, whether arising from a permanent cross, or an original stock; he says, indeed, at the very outset, that he may not be misunderstood, "Of the species of the domesticated animals naturalized in the British Islands, numerous varieties present themselves, to which we apply the term breeds; the character of species may have been imprinted by original organization, or may have been the result of laws of organic development and change, of whose nature and operation we are ignorant." However, the next subject is the ox, of which he gives the particulars of nineteen distinct breeds. Then the hog, of which we have four: the horse—the racer, the hunter, horses for the saddle, and light carriages, such as the old English coach-horse, the Cleveland bay, the hackney, and the cavalry horse; then those for heavy draught, of which there are four breeds described. Their structure, their nature, proper food and treatment, and general characteristics, are admirably explained. The most interesting to the general reader, because everybody's favourite, is the dog, of which we have four different groups, and in each group the several families that belong to it. To follow the author through his long and interesting account of this animal, would be to rob the volume of its most charming attraction; but, oh! man, man! take a lesson from the following compressed particulars, in which the very best of

us are eclipsed in even the best of our actions:—

"But of all the attributes of the dog, those which seem the most to have claimed attention, are his attachment to man in general, and his fidelity to individuals in particular. The dog very rarely, and never but under peculiar circumstances, seeks to gain his natural liberty. He prefers, to the state of freedom, the protection of man, and lingers near our dwellings, even when he is shunned and disowned by us. When he attaches himself to any one, all his actions indicate that the relation is one which has a foundation in the affections of the animal, and does not vary with the degree of benefits conferred. The dog that shares the lot of the miserable and poor, is no less faithful than another that enjoys all that can gratify the senses. The peasant boy, who rears up his little favourite in his cabin of mud, and shares with it his scanty crust, has a friend as true as he who has ease and abundance to bestow. Release from the cord of the blind beggar the dog that leads him from door to door, and will he follow you a step for all with which you can tempt his senses? Confine him in your mansion, and feed him with the waste of plenteous repasts, and let his forlorn companion approach your door to crave a scrap of food, and the dog will fly to him with fidelity unshaken, and bound with joy to be allowed once more to share his miserable lot. Again and again has the dog of the humblest and poorest remained faithful to the last, and laid himself down to die on the grave of his earliest friend. Recently, a poor boy, in a manufacturing town, had contrived, from his hard earnings, to rear up a little dog. The boy, as he was passing along to his daily work, was struck down, and dreadfully maimed, by the fall of some scaffolding. He was carried on a shutter, mangled and bleeding, to an hospital near, attended by the dog. When he was brought to the door, the dog endeavoured to enter along with him; but being shut out, he laid himself down. Being driven beyond the outer gate, he went round and round the walls, searching for an opening by which he could enter. He then lay down at the gate, watching every one who entered with wistful eyes, as if imploring admittance. Though continually repulsed, he never left the precincts night or day, and even before the wounded boy had breathed his last, the faithful dog, struck with total paralysis, had ceased to live. It is well known that the soldiers of the French levies were often mere boys, brought from their country homes, to undergo at once all the rigours of the service. They were often accompanied by their little dogs, who followed them as best they could. Often,

after the carnage of a desperate field, these dogs have been found stretched on the mangled bodies of their youthful friends. A French officer, mortally wounded in the field, was found with his dog by his side. An attempt having been made to seize a military decoration on the breast of the fallen officer, the dog, as if conscious how much his master had valued it, sprung fiercely at the assailants. An unfortunate soldier, condemned for some offence to die, stood bandaged before his comrades appointed to give the fatal volley, when his dog, a beautiful spaniel, rushed wildly forward, flew into his arms to lick his face, and, for a moment, interrupted the sad solemnity. The comrades, with tears in their eyes, gave the volley, and the two friends fell together. A youthful conscript, severely wounded in the terrible field of Eylau, was carried to the hospital amongst hundreds of his fellows. Many days afterwards, a little dog had found its way, no one knew how, into the place, and amongst the wounded, the dying and the dead, had searched out his early friend. The fainting boy was found by the attendants with the dog beside him, licking his hands. The youth soon breathed his last, and a kind comrade took charge of the dog; but the animal would take no food, pined away, and shortly died. And a thousand other examples might be given of an affection in this creature, unaltered by changes of fortune and enduring to the last."—Pp. 693, 694.

As a book truly useful to all who keep domestic animals, whether for profit or amusement, and entertaining to those who do not—as a valuable lesson in natural history, and a standard book of reference, we cannot say too much in its praise. It must be read to be appreciated; and the sooner it is read by all, the sooner all will be improved, not only in the knowledge of animals, but it will set them reflecting on their knowledge of themselves.

The work is beautifully printed, and the wood engravings are excellent.

CONTEMPORARY WRITINGS

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

PROTECTION OF ROSES.—The tender kinds of Roses when grown as dwarf in beds, or as simple specimens, are most effectually protected by pressing the shoots close down to the ground after the bloom is over; and then covering them over with dry fern, branches of spruce fir, or dry litter laid on loosely and thinly, just sufficient to hide the branches. The most tender Roses are safely preserved in this way, provided the shoots get fairly matured in the summer and autumn. Where it can be had, fern is the best material for several

reasons: in the first place, it does not lie so compact as straw, and thus affords more protection; it is less littery; and its colour is less conspicuous, and therefore less objectionable, than that of straw or litter. For standard Roses of tender character, some pieces of fern may be loosely tied among the branches forming the head: they should be tied together by the stems, and then set over the branches like an extinguisher, the branches being first loosely tied in so that it may cover them: a hay-band may also be wound round the stems. When the plants are growing against a wall, a few pieces of fern may be stuck in among the branches. All these protecting materials must be gradually removed during April and May—gradually, because the young shoots which are always liable to be injured by spring frosts, are specially so after the plants have been covered up in winter.

CHAPMAN'S PRINCE OF WALES PLUM.—This Plum was raised at Brentford End in 1830, and is a seedling from the Orleans, but is quite distinct from that variety. It is larger, of a different shape, being inclined to be oval, different in colour, which is a bright purplish pink, with much more bloom, and the flavour is much superior. The flesh is yellowish or pale amber, and parts from the stone. Unlike the Orleans it never cracks, and the shoots differ from those of that variety in being smooth, whereas in the Orleans they are downy. The leaves are broad, roundish, and easily distinguishable from those of any other Plum. The trees are of vigorous growth. Upon stocks planted in the spring of 1844, and budded in August following, are this year shoots upwards of 8 feet in height. The bloom is protected by the foliage in a most remarkable manner, and it has a peculiar habit of spurring all up the branches. Trees of this variety, three years old, have been covered with Plums as thickly as they could be placed, at 3 feet up the stem, so that it has been necessary to fasten the branches up with stakes to prevent them breaking down. It bears well on suckers from the mother plant.

THE MIMULUS.—As it is the generally received opinion that the different varieties of *Mimulus variegatus* and *M. cardinalis* have been crossed by hybridizing, and having for long entertained a similar opinion, I venture to trouble you with the reason that has induced me to come to a contrary conclusion; and I do this under the impression, that it will probably induce such notice as may determine the question. If we take a theoretical view of the matter, we shall at once conclude that the union of the two species has not taken place; else knowing how usually seedlings assume the colour of their male parent, we might expect to see amongst the *M. varie-*

gatus, self colours of rose, crimson, deep orange, and scarlet, whereas their ground colours only vary from pale cream to deep orangy yellow; their foliage also indicates no relationship to the cardinalis species. I shall conclude, by referring to the result of three years' experiments: for two seasons, I in vain tried to hybridize *M. Moodiana* with *McLainii* and *cardinalis*: last summer I determined to devote more care and attention to the subject; for which purpose I potted off several plants of *M. Moodiana* and its varieties, and placed them in a cold pit, where they grew most vigorously. Having noticed that this kind of *Mimulus* opened its stigma, and that the anthers became dusty before the flower expanded, I cut each bud open to the base, and removed the anthers before the bloom was half-matured. At the proper time, farina from *McLainii* was applied, and the seed-pods swelled off and ripened, and I pictured to myself some most magnificent hybrids; but to my great mortification, I found that what ought to have been seeds, were mere empty skins. I next hybridized the same plants with varieties of their own species, and have obtained abundance of fertile seeds. I embrace the present opportunity briefly to express my surprise at the limited attention that florists are giving to the extension of varieties by hybridizing, of *Achimenes* and *Thunbergia*. I can promise, from experience, that if they will cut open the flower of the former, and take out the anthers in good time, this most interesting and beautiful tribe of plants will be most surely, though probably at first, slowly improved. If *Thunbergia* be subjected to similar treatment, it seems most probable that great additions might be expected to our present collection. Why not attempt to produce a free blooming *T. chrysops*, by crossing it with the older varieties?—*A. C. Leeds*.

NATURAL MEANS OF PROPAGATING PLANTS.—That propagation by seed is a natural method of multiplication is doubtless true; but to say that no other natural means exist is absurd. The sugar-cane (*Saccharum officinarum*) is rarely propagated by seeds; its natural mode of propagation is by the stem, which when blown down by the storm emits roots at every joint; and man has availed himself of this natural property as a means of artificially extending the plant. The tiger lily (*Lilium tigrinum*) naturally propagates itself by bulbs, formed in the bosom of its leaves; we never saw it form a seed. The Jerusalem artichoke (*Helianthus tuberosus*) naturally multiplies itself by its tubers, which are bodies of the same nature as the so-called root of a potato; no one ever saw it produce seed in this country. And *Achimenes* are principally multiplied by little scaly bodies

resembling tubers, and formed in such abundance as to render seed unnecessary.—*G. C.*

VEGETABLE WAX.—In the *Proceedings of the Boston (U.S.) Natural History Society*, Mr. Teschemacher remarks that, in the province of Massachusetts there are very extensive palm-leaf manufactories, in which the sweepings and dust, arising from splitting the leaf, accumulate to a large amount, and are thrown away as useless. He had presented specimens of vegetable wax, extracted from these sweepings, one of which had been melted in hot water. Also the two proximate ingredients, cereine and myricine, into which he had separated it, to prove its identity. The cereine is originally deposited in a white gelatinous mass: this he had melted. That this wax is the glossy covering which is spread by nature over the surface of the leaf and stem, may be seen on inspecting the two specimens of leaf, one previous to, and the other after the operation to deprive it of the wax. The so-called wax of the common *Myrica cerifera*, as is well known, is a vegetable tallow, containing stearine and the other ingredients of fat. He is of opinion, though without having made any detailed and exact experiments, that from these sweepings sufficient wax may be extracted to pay a good profit; from what he has tried, he does not imagine the expense would exceed 40 or 50 per cent. of the value of the wax made. It can easily be made of a pure white colour.

BALSAM SEEDS.—A correspondent of the *Gardener's Chronicle*, states that the case in which the seed of the balsam is enclosed, yields an orange dye of a beautiful colour. As the balsam seeds freely, this could be produced extensively at a cheap rate, so as to become an object of commerce.

LATE PEARS.—The apartment in which these are kept should be of a uniformly low temperature, and quite dark, and should be submitted to but few changes; but when they are wanted for use, it will be advantageous to submit them to an increase of temperature—about 60 degrees will be sufficient, and this will have the effect of thoroughly ripening them, and removing the grittiness which detracts from the merit of some otherwise excellent kinds; it will heighten the flavour of all. Few, however, should be submitted to this treatment at one time, as they should be used within a few days afterwards.—*M.*

ALOYSIA CITRIODORA.—There is a specimen of this plant (the lemon-scented Verbena) at Bretton Hall, in Yorkshire, growing in the conservatory, that is upwards of twenty feet high, with a clear stem of ten feet, forming a tree with a fine branching head.

DWARFED TREES.—The passion of the Japanese for dwarfed plants is considerable;

and it is principally on that account that the cultivation of the Mume Plum, (which is looked upon as something holy, and bears a great value throughout the empire) is one of the most common and profitable occupations of the country. A dealer offered us, in 1836, a bush in full flower and scarcely three inches high : this prodigy of gardening is grown in a little varnished box with three steps, like the boxes of medicine which the Japanese carry at their girdles : in the upper step was the Mume ; the next step was occupied by a fir-tree of similar smallness ; and on the lower step was a bamboo, not above an inch and a half high. It is said that the Japanese select the very smallest plants, as one means of facilitating the dwarfing process.—*Siebold's Flora Japonica*.

PRESERVING WALNUTS.—To ascertain which are perfect fruit suitable for storing, the best plan is, to immerse them in water after removing the husks : the perfect ones sink to the bottom ; while all the imperfect ones float on the surface ; these should be used first. After they have laid to sweat, they should be cleansed by being well worked in a dry sack shaken from end to end between two persons ; the friction of the sack cleans them perfectly. Place them in earthen pans that are quite dry and not glazed : cover them with a piece of canvass or thick brown paper, with about an inch of dry sand over it : store them in a moderately dry place ; and as required for use they should be placed for eight or ten days in a damper situation, which will freshen them, and causes the skin to peel off easily. This is a sure and easy way of keeping both walnuts and filberts, or other nuts.

FRUIT ROOMS.—The management of a fruit room does not consist merely in storing it to the best advantage : frequent and careful examination is necessary to remove such as may be approaching to a decaying state, before they have spread contamination around them : such fruit should at once be removed quite away, and all litter calculated to produce damp or mouldiness should be cleared away, so that the fruit room may at all times be as cleanly and comfortable as a sitting room.—*M*.

WHOLE SETS OF POTATOES.—Often as this has been recommended by practical men, there are theorists who constantly advocate the cutting of Potatoes upon the unfounded notion that large tubers have stronger eyes, and that stronger eyes bring better produce. Now it has been proved over and over again, that potatoes as large as a hen's egg or a walnut in its green husk will yield as good a produce, and stand as well as the finest tubers that can be obtained, and that when a crop planted thus, fails, if indeed it ever fails, we must look for some circumstance totally unconnected with

the size of the tuber. Whole tubers are in many respects better than cut ones, and if as economical by reason of their being of the size usually sold very cheap, are to be preferred on every account. First, they stand wet and cold, and heat and drought, much better than the best cut sets. Secondly, they are less liable to disease. Thirdly, they may be planted earlier and deeper without danger. Fourthly, in a vast majority of cases they yielded a better crop. Fifthly, they can be purchased more cheaply of other growers at taking-up time, than the same quality of sets could be purchased in larger tubers to cut up. Lastly, the crop is always more even or equal than any with cut sets. Upon the whole, we cannot help strongly recommending that which practice has proved to be beneficial. Procure whole tubers grown on other land ; plant early, plant deep, and calculate on a good comparative crop, under any circumstances.—*G*.

THE POLYANTHUS.—This plant is much neglected round London, some say because it is difficult to cultivate. This is not the fact, but, like all other subjects, it requires attention, and rarely obtains it. This spring visitor is shown in perfection in worse climates than London, and simply, because they go about things the right way. Those who exhibit best, grow them in the open ground. When two trusses throw up, the weakest is removed ; the number of pips are lessened when there are too many ; and not until the day of show does the plant obtain the honour of a pot. The ground is wetted almost to mud on the morning of show. The earth is cut all round beyond the reach of the fibres, and it is transferred to a pot of sufficient size to take the ball of earth without curtailing any of the roots. In this state, after being again watered, it is shown, and will frequently, if well shifted, last several days, in what may be called good showing order. Round about London, people have attempted to grow them like Auriculas in their pots ; and as the Polyanthus makes growth in mild weather all through the winter, they frequently suffer from too much or too little moisture, alternately being drenched and dried, not unfrequently damping off or being destroyed by the red spiders. The natural earth is its most congenial quarter.—*G*.

THE PICOTEEES MRS. BARNARD AND MISS DESBOROUGH.—The Woolwich growers insist that these Picotees are both identically the same, but that Mrs. Barnard is a sport from the other. The evidence is in favour of their identity as one variety : the grass is the same, the pods the same, and the habit the same, but the flowers, in their proper character, are very unlike.

ARTOTROGUS HYDNOSPORUS.—This is a curious parasitical fungus, which is found in

the intercellular passages of potatoes, during the process of germination, or just after it is completed. It has the flocci branched, continuous, and flexuose, creeping through the intercellular passages; there are two kinds present, of which one is much more slender than the other; the latter creeps widely in the intercellular passages, and is evidently the mycelium, or spawn. This fungus was discovered in the course of some experiments by Dr. Rayer, chief physician of the Hôpital de la Charité, at Paris, who has been paying great attention to the disease with which potatoes are affected.—*M.*

PLANTING POTATOES IN AUTUMN.—I grow only two sorts of Potato for seed; the early frame, and the ash-leaved kidney, and both of these I planted last autumn, each set being a whole Potato. On taking up the roots, I find that, notwithstanding the inclement winter, I have gathered a fair average crop, free from disease, and as clean and fine flavoured as any I have ever dressed.—*J. A. D.*

THE HABRANTHI.—The Habranthi are in general pretty hardy; but as their leaf should be in perfection in the winter, it must be liable to injury from frost if not protected in some manner; they require, in order to prepare their blossom, a hot period of rest, which would be often wanting to them if exposed to our climate. When cultivated in a border, they should be covered with a glass frame to keep them hot and dry in May, June, and July, with a covering of mats or straw that remain the winter; or they may be taken up when the leaves decay without breaking the fibres, kept in sand, and reset three months after. As most of the bulbs are found in dry gravelly situations, they must require the border to be well drained, which should be done by a layer six inches deep of stones, covered with an inverted sod, or at least with heath, furze, or straw.—*Herbert, in Botanical Register.*

HYDRANGEA JAPONICA.—This plant proves to be about as hardy as *H. hortensis*, and requires similar treatment. The finest trusses of bloom are always borne by single-stemmed plants, newly raised from cuttings. But this species does not look so well in that style, as when forming a moderate sized bush with a number of flower heads. The old wood must be cut out yearly, to avoid a straggling character, and to keep the plants clothed with foliage down to their base.—*M.*

REASONS WHY THE HOLLYHOCK IS NOT A GOOD SHOW FLOWER.—First, because the entire beauty of the Hollyhock depends on the form of the whole plant, which cannot be exhibited. Secondly, because the single flower has no stalk, and therefore cannot be placed in a stand. Thirdly, because, although a magnificent plant in a garden, the spike is no

sooner cut off than it begins to fade, and they have the meanest possible appearance in an exhibition. Lastly, because, though the spike, when cut, is useless, cutting it destroys the plant for the season.—*P.*

PETUNIAS.—For planting out in the flower-garden, in the summer months, these plants are best when propagated in the spring, if there is any convenience for doing so. The young plants grow more bushy and vigorous than older ones which have been kept over the winter, and a few old plants, suitable for the purpose of propagating from, are more easily preserved than a stock of young ones. These plants, if placed in a warm place, (such as the forcing-house), in February, will furnish cuttings in abundance, which are to be taken off and rooted in a hot-bed frame, and then potted into small pots, and hardened off in a cold frame, so as to be fit for planting out by May. The soil for these kind of plants should be well worked, and in good tilth, but not over rich. To keep the plants dwarf, compact, and covered with bloom, the points of the leading shoots should be regularly “stopped,” as the garden term is, once a week, after the plants begin to grow. The following dozen varieties are some of the best among the new ones for the flower-garden:—

Prince Albert.—Clear rosy purple, very bright, of large size and good form, and not liable to burn. Height, 18 inches. *Purple Perfection.*—Dark velvety purple, of fine form, and not so liable to burn as many of the dark varieties. Height, 18 inches. *Ovid.*—Dark violet purple, changing in the autumn to blue. It is a plant of strong habit, with a large and finely-formed flower. Height, 18 inches to 2 feet. *King (Ivery's).*—A flower of nearly the same colour as the preceding, but a few shades brighter, and not so liable to injury by bright sunlight: a most profuse bloomer. Height, 18 inches. *Princess Royal (Ivery's).*—A delicate pinkish flower, with a very distinct bright purple throat; a very pretty variety. Height, 12 to 18 inches. *Reliance.*—Pale pink, with dark throat, and much veined with dark purple; of fine habit and substance, and perhaps the best formed flower out. Height, 12 to 15 inches. *Kentish Beauty.*—Pink ground, mottled with flesh-colour, of fine form, medium size, and a most profuse bloomer. Height, 12 to 18 inches. *Striata Delicatissima (Girling's).*—A flower of the same character as the preceding, only mottled and streaked with bright red, medium sized and very distinct. Height, 12 to 15 inches. *Beaute Parfait.*—Mottled reddish flesh-colour, veined with dark purple; a flower of good substance and medium size. Height, 18 inches. *Formosissima.*—Velvety pale flesh-coloured ground with dark purple

throat, and much veined with the same colour ; a most profuse blooming variety, and one of the best for the flower-garden. Height, 18 inches to 2 feet. *Pet* (Ivery's).—A pretty little gem ; pale pink mottled, margined, and veined with bright lively purple ; requires careful management through the winter, and rather rich soil when planted out. Height, 9 to 15 inches. *Queen of May*.—White, mottled with bluish-purple ; a distinct and beautiful variety when it comes in good character, but very uncertain. Height, 18 inches.—*A.B.*

FORCING POT-HERBS.—Scarcely any one thing is more easily produced than mint and fennel out of season ; and yet no persons take the trouble to provide it, though in great request. Even in good establishments gardeners hardly ever provide those things so early as they are wanted. Lamb is frequently produced in January or February ; and there are those who care nothing for it if they are debarred of their mint sauce. Pickled salmon and prime mackerel are had very early in the season, long before a bit of fennel can be procured of the out-of-door growth. There are other uses, perhaps, to which these herbs may be put besides sauce-making ; but nothing can be more simple than their production at all seasons by merely potting a few plants, and starting them in a common hot-bed or stove, or even a warm green-house ; but in a place where hot-beds are always at work, it is only necessary to put some strong roots of mint and fennel, and place them in the hot-bed from time to time, according as the supply is likely to be required. The period for potting them is when they are throwing off their seed vessels : cut the old plants down at that time, and put them into eight-inch pots ; dig up a patch of roots as large as this pot will take, and place it awhile in the open air. About October, put a pot of each in a hot-bed ; and in November another of each ; in December a third of each, and you will have a succession as soon as they can be wanted. They are still less trouble if you have a stove, because they are more regularly heated, and have more air.

CHINESE AGRICULTURE.—We often apply the epithet of semi-barbarians to the Chinese, because they very properly wished to be independent of Great Britain, and because they think and act differently to ourselves ; and also, in consequence of their not being so skilful in some manufactures as Europeans : yet, we find this people increasing within their own boundaries, until their numbers are almost incredible : from the remotest ages, they have been in the habit of practising, in the most ingenious manner, many of the arts which, but lately, Europeans have become acquainted with :—their soil has been cultivated within the most arduous labour, and its fertility increased

by a method, which we, who pretend to be more learned and civilized, have almost up to the present time neglected, despised, or at least been in great ignorance of ; but science has pointed out to us discoveries which demonstrate the means of securing to us the most ample harvests ; and the Chinese have thus been able to compel their limited soil to afford them sufficient food for a population almost unlimited in numbers, which is estimated to be upwards of 300,000,000 of persons, and this being the case, a scientific agriculturist is tempted to follow so valuable an example.—*The Plough.*

CAUSE OF THE POTATO ROT.—Mr. Chapman, of Brentford End, has published some curious facts respecting the disease in the potato crop, from which we deduce the following : First, that there are no symptoms of the disease among early potatoes, planted early, and taken up early ; but that parts of the same crops left in the ground took the disease as much as any. Secondly, that the disease in a general way affected new sorts of potatoes, and even seedling potatoes as much as old ones. Thirdly, that the disease must have originated from purely atmospheric influences, because it affected potatoes in all kinds of ground, wet and dry, poor and rich, stiff and light, high and low, and although there may have been partial and local exceptions, no kind of land was free from attack. Fourthly, that the disease is not inherent in the potato itself. Potatoes planted in the ordinary way in July and August, in November were nearly all diseased ; a quantity of the same sets kept over and planted the first of October, have matured themselves completely, and have not in the whole lot the slightest symptoms of disease. Fifthly, that the disease must have commenced in July, and ended in September, or thereabouts. Many particulars are given confirmatory of these conclusions in the *Gardener's Gazette* of January 24th, in which paper, Mr. Chapman has contributed an elaborate, but thorough British article.

SOWING SEEDS.—In saving the seed of Stocks and Wall-flowers, the single ones only avail you ; and as the double flowers have no organs of generation, they are useless. It is a fallacy to put a single one amongst double ones. The proper way of saving seed is to select any single one that has five petals instead of four, and remove all other single ones. In saving seed from Dahlias, Hollyhocks, Larkspurs, China Asters, Camellias, Roses, or other double flowers which yield seed, choose the best that have the necessary organs and seed-vessels. In saving the seed of vegetables, select the very best, and let none other bloom within a mile if you can help it.—*Glenny's Almanac.*



THE HORTICULTURAL SOCIETY'S GARDEN, CHISWICK.

WITHOUT making any allowance for the difference of taste, there have been many persons ready to condemn the laying out of the Chiswick Gardens; and it would be ridiculous to say they were perfection; but it would also be unjust to deny that there are many parts exceedingly pretty, and until we can see all landscape gardeners hit upon the same pattern by accident, or, at any rate, adopt throughout the work the same principles, we shall not quarrel with any plan in which there is a mixed style, and especially when it is for the use of a mixed public. The Horticultural Garden contains very many beautiful specimens of hardy plants; and, with all the faults which a hypereritic may be disposed to find with it, as a whole, we cannot help according to the early management a foresight which many of the present day never even study, much less exhibit. The Horticultural Society of London was founded, as its title implies, for the purpose of promoting the advancement of horticultural science. Very much real service may be traced to its proceedings; among the foremost of which may be mentioned that particular feature, the trial of every experiment, however ludicrous, that has been so brought forward as to excite public attention, the object being to enable the council to publish an official report of its fallacy from actual experience, if it be a fallacy, instead of denouncing it without a trial, which would rather strengthen than overturn the sinister object of schemers; and of reporting its success, if it turn out well, upon an authority that cannot be questioned—the fair trial in their own garden. Connected with this feature may be mentioned the trial of all *new* and *alleged new* fruits, and reporting the result; and for the manner in which this has been carried out, we

need only refer to their Catalogue of Fruits, a master-piece of statistical information on the subject of the orchard—not perfection certainly, nor do we pledge ourselves to subscribe to all the opinions and decisions, nevertheless a master-piece: there is nothing in existence contains so much of such good information upon the great variety of fruits that are forced upon our notice by different cultivators at home and abroad. For every fruit we have an opinion, and, for the most part, a very sound one, of its quality, its appearance, habit, and general characteristics; and, above all, the many names under which it has been sold to the public. And this information has been obtained by experiment; for instance, a new fruit is advertized; the man at the head of the fruit department sees it, and pronounces it nothing more nor less than something already known and grown under another name. The plant is, nevertheless, procured, planted, and the progress tested in every way with the plants already in the collection. The merely knowing it is so would not prevent the trial, because condemnation without trial might be wrong, for the reasons we have mentioned. Another great feature in the management and plan of the Horticultural Society is that of collecting from abroad, subjects that we have not yet got at home. From the collectors employed by the Horticultural Society many valuable plants have been from time to time raised, and distributed freely, and, so far as we can learn, without sufficient preference to create any dissatisfaction among the Fellows. We never applied in vain for anything we wanted; and we must say that in the garden we never witnessed any ill-behaviour or impatience; while, so far as the fruit-garden goes, we have no hesitation in saying, that few, if there be any

other, could conduct the department so well as Mr. Thompson. Mr. Munroe, the gardener, is one of those persevering, quiet, but experienced persons, who, like the mainspring of a watch, keep every thing going by their regularity, precision, and equal force. Much has been said and written about the society having propagated common plants to distribute to its members—much to the injury of the nursery trade; a thing not contemplated in its objects—but, without defending this proceeding as a principle, we are bound to look over it as an expediency forced upon the management by the unfortunate death of Mr. Douglas, their collector, who, as is too well known, fell a prey to wild beasts, while treading almost unknown lands in search of botanical novelties. This awful visitation caused for a time a lapse in the supply of new subjects, and the council were, in some measure, bound to supply the subscribers of four guineas per annum with something; this, though not a justification of the proceeding as a principle, was, at least, excusable; and if the supply, as regarded old subjects, or rather nursery subjects, was abated afterwards, which we are informed was the case, there was no real ground of complaint. We need scarcely say, that to the collectors of the Horticultural Society we are indebted for the introduction of some of the most beautiful plants in existence, and, indeed, for almost nine-tenths of the novelties that have been imported since it was fairly established; and a vast number of them through the instrumentality of the gentleman whose lamented and melancholy fate we have, in common with every lover of horticulture, had to deplore. In the gardens of the society all the varieties of fruit are preserved as long as possible.

Almost every description of pit, house, stove, frame, and contrivance for artificial temperature, has been tried, and many are now in use. A lofty conservatory has been erected, and planted with many curious specimen plants; and the establishment of shows three or four times a year draws many thousands from long distances to see such collections of plants as are not seen at any other place, unless it be the Regent's Park, where there are also shows, supported, for the most part, by the same exhibitors; and the rivalry perhaps increases the attractions of both shows. There are many bits of effective planting about the grounds; most of the subjects have been placed in groups, each of one genus; and in parts there is considerable taste in the grouping; nevertheless, many of the shrubs have outgrown their stations, and constant removals have been, and will for some time continue to be, the consequence; many of the early planted specimens fairly occupying all the room formerly devoted to the whole group. Broad straight walks, albeit in our mind highly improper for a private estate, are very appropriate for crowded gardens, and gardens open to the multitude. There are many spots and objects well adapted for sketching, and that which heads the present brief notice is among them. We ought to notice, that the conservatory is only one wing of the intended edifice, though, so far as appearance goes, it is complete in its way. Fellows of the society are entitled to many privileges, and are admitted by ballot, after being proposed by three members, and the name suspended in the public room three several days of meeting, the fee being six guineas entrance, and four guineas per annum.

GARDENING CALENDAR FOR MARCH.

THE CONSERVATORY.

MANY of the earlier-growing plants, and especially such as Camellias, will now be making their annual growth; and, as much of the success of flowering them will next year depend on the manner in which this growth is effected and matured, whatever assistance can be rendered should be afforded to the plants. A trifling increase of warmth, which is desirable for them, will, in most cases, be produced by the increased power of the sun at this season; but care must be taken to render as much heat as possible, derived from this source, available to the plant: one great means of doing this is, to avoid the foolish custom of setting every door and window open as soon as the heat begins to rise a little, by which the temperature is not only lowered,

but the plants subjected to a chilling draught. Ventilation, to a certain extent, is necessary and desirable; but the means necessary to produce even great results in this way, are by no means so comprehensive as is generally imagined: the judicious opening of one or two ventilators at the top of the house, and a very slight opening indeed below, will produce a rapid change in this respect. In moisture as much assistance must be given as can be, but the house being required to be kept also highly decorated with plants in bloom, a generally humid atmosphere cannot be indulged in: the best thing to do, is to sprinkle the individual plants daily with tepid water, through a very fine syringe, and also the soil about them—not enough to make it wet, but

just moistened, so as to give off some portion of vapour, which will rise about the plants under the influence of the heat of the sun.

Temperature, &c.—More heat, moisture, and air, will be required by the plants generally as the season advances: a temperature of 50 degrees may be taken as a mean, above which, from 10 to 15 degrees may be allowed by sun-heat; on no account maintain a high night temperature. Evaporation will be more brisk, therefore more moisture will be required, both at the roots, and in the atmosphere about the leaves and stems. As to ventilation, keeping in mind what has been stated above, a somewhat freer circulation of air may be allowed than was the case last month; indeed, as one great use, if not the only use of ventilating, is to regulate the temperature, it will be pretty evident, that with the increase of heat by the sun, increased ventilation will be necessary to avoid its being felt in excess.

Shading.—This is not to be recommended in general. Plants that are quite as they should be at the root, do not suffer from the sun's rays; but as the interior of a glass structure will be apt to become too much heated when these rays are very powerful, it may be allowed to prevent this inconvenience. Plants in flower, too, require some degree of shade, both to keep their colours from fading, and also to prevent the blooms themselves from falling. Plants in pots generally suffer more when the rays of the sun are permitted to strike the sides of the pots, and thus act on the delicate and tender spongioles of the roots: if the roots are protected, the tops—of growing plants at least—will not be injuriously affected by sun. Sometimes shading is necessary from other causes, such as bad glass having been used—glass full of lenses, which collects the sun's rays into foci, and thus the leaves of the plant are liable to get scorched.

Insects.—An unceasing warfare should be maintained against all sorts of insects to which plants are liable, especially on the permanent plant, and climbers; for the latter grow so fast, that if not cleared early in the season, it is almost impossible to do so afterwards; and the latter, from their size, and being permanently fixed, are not so easily subjected to other corrective treatment. Red spider and thrip must be kept down by syringing with clear soot water; green-fly, or aphid, by fumigation with tobacco; and the scale insects by a thorough routing and cleanliness.

Climbers.—Unremitting attention is required by them as they progress, for they mostly grow rapidly, and soon become confused, unless very well looked after. Regard must be paid to the natural habits of each kind as to flowering, and the present management must be moulded accordingly: those

that bloom on the long shoots of the present year's growth must have them encouraged, and the weaker ones removed; whilst those that bloom on laterals must be managed with a view to the production and encouragement of laterals. For climbing plants in pots, cylindrical-shaped, or pillar trellises, are preferable. A few later flowers may be produced from some of the free-flowering creepers, by pruning the plants severely now.

Shifting.—The large plants, which are kept in large pots, or in boxes or tubs, should be looked to at this time of the year, and placed in larger ones, if necessary. Usually, however, it is sufficient, and preferable, to remove carefully some of the old soil from the roots, and replace them probably in the same pots or boxes, filling up with fresh and congenial soil: the state of the roots must in great measure decide this question: if they are numerous and healthy, and the plant is required to increase in size, a larger pot may be given it; but if they are few, and do not appear vigorous, by no means give them more room at the root, but rather restrict them. Put in plenty of drainage, and use the soil in a very rough state, with a few pieces or lumps of charcoal thrown in as the shifting proceeds.

Flowers.—Most of the gay and charming shrubs of New Holland will now be blooming, and will be required to deck this structure; besides which, every other house should be taxed to supply its quota, so as to render this house the "gayest of the gay." Sweet-scented plants should especially be provided in considerable numbers, for there is a charm in their odour fully equal to that of their beauty.

THE GREEN-HOUSE.

THE re-potting and shifting of the plants, as they require it, must be well followed up; (see the directions given at p. 51.) The propagation of plants by the many arts practised, on the principle of extension, should be prosecuted; this includes such as by cuttings, by layers, grafting, inarching, budding, division of the root, and so on. Cuttings, when they can be got in a fit state, root better now than in the heat of summer, and are better able to get well established before winter than those rooted in the autumn.

HOUSE FOR MISCELLANEOUS PLANTS.—A succession of bloom, which is one of the main objects of furnishing green-houses at all, will be aided by keeping a few plants in various stages of forwardness as regards pruning and stopping back the young shoots. The same may be said of potting, for it is very impolitic, for more reasons than one, to shift the whole of a collection of plants, or all the plants of one particular kind, at one time.

Temperature, &c.—This house may be kept at about a medium of 45 degrees, not allowing more than 10 degrees of range above this point. Perfect ventilation must be maintained whenever the weather will permit, which, at this season, will be every day, and sometimes all night. Syringe the walls, paths, and every available space, every morning, in order to raise a genial moisture; the plants themselves may be syringed lightly, both morning and evening, when the air is soft and mild.

Melocacti.—This is the time to *grow* Melocacti. Pot them, if they require it, draining them very perfectly indeed. If they are put into a warm moist atmosphere for a month or two, they will make remarkable progress; a hot-bed frame is one of the best of all places for this purpose: they must be fairly, but not excessively, supplied with water to the soil.

Succulent plants generally may be more liberally watered; with the majority the ordinary green-house temperature is sufficient.

Bulbs.—All the green-house bulbs will now be growing or flowering, and will require to be kept pretty liberally watered. By no means let them get shaded, but give them all the light they can possibly have, while they have a green leaf remaining. In the case of any of the earlier ones which may be approaching maturity, decrease the supply of water when the leaves begin to turn yellow, and finally withhold it altogether.

Lisianthus Russellianus.—Autumn-sown plants of this fine green-house biennial, which have been kept in store-pots, or in small pots, should be potted into larger ones, using a rough open compost of two parts fibrous peat soil, and one part fibrous loam, mixing some lumps of charcoal among it while potting, and making a very perfect drainage; these plants then require a warm light place in the front of a green-house; or if an intermediate temperature can be given them, so much the better.

Chrysanthemums.—Prepare these for autumn flowering by taking off and potting singly some of the off-sets or suckers from the old stools; they may be taken off close to the base, without roots, (or with—it is not material which,) and placed in a moderate warmth until rooted, when they must be potted singly, and grown all the summer as hardy as possible.

Hydrangeas.—Plant cuttings of the terminal shoots of *Hydrangeas*, both *hortensis* and *japonica*, to make dwarf-blooming plants for flowering next spring; they must have the terminal bud perfect, and two or three pairs of leaves only; root them in a mild heat, and grow them through the summer so as to get plenty of roots, and to swell the terminal bud,

but not to make any further growth: these plants, next year, should bring one large head of bloom, and the whole not more than a foot or so in height.

Violets.—Propagate Neapolitan Violets for flowering in the winter, by planting the runners in light rich soil: they will make nice stocky plants by the autumn.

Roses in pots.—Some prefer to take up strong plants from the open ground—at least of all the hardy kinds—and pot them for blooming in the new-fashioned way, as potted specimen plants; others—ourselves among the number—prefer to *grow* young plants for this purpose *in pots from the beginning*. Our reason for this preference is, that the conditions of growth in the open ground and in pots are so different, that a transfer from the former to the latter acts as a check on the plants which have been previously growing more freely, and quite at liberty, in the open ground; and, although we will not deny that handsome and well-bloomed specimens have been obtained the other way, yet we prefer the other plan because we can best see our way in it. When the potting-up plan is adopted, it would be well to keep the eye on suitable plants, and prevent over-luxuriance until the potting time, in the autumn. In following out the other plan, take cuttings or layers, according to the habits of the varieties, as soon as they can be had, and grow these young plants carefully on in pots: they will bloom next summer tolerably well if well looked to this year. Old plants previously bloomed in this way, should have been pruned back in autumn, and repotted in rich turfy loam, and will now be growing more or less. Cuttings of the half-ripened shoots of roses, strike root readily in warmth, especially if they are taken off with a “heel” of the former shoot.

Primulas.—Re-pot the plants that were sown late last autumn to flower during the early part of the following autumn. Autumn-flowering specimens may also be had by sowing the seeds about the middle of March, in pots or pans, placing them in a little heat; when the young plants appear, they should be removed to a green-house, and, when large enough, pricked out into pots or pans, and kept in a shady part of the house: they will be strong plants, ready for planting out by the end of May. Prepare a frame under a north wall, (which is the most suitable situation for them,) and plant them out in a compost of three-parts leaf-mould, and a little turfy loam or sand; place them about six or eight inches apart; keep them close for a few days, after which the covering should be removed entirely, to allow the dews and rains to fall on them. They will require no more attention until potting time, but they should have a

liberal supply of water and liquid manure occasionally. About the middle of September they should be taken up and potted in six, seven, or eight-inch pots, according to circumstances, in a compost similar to the above; afterwards place them in the frame, keep them close for a few days, and wet the foliage three or four times a-day, to keep them from flagging: in about a fortnight they may safely be removed to the green-house, and watered more sparingly; they will bring a good succession of bloom throughout the autumn. The double-flowered ones must be raised from cuttings, and flower during the whole winter.

Lobelias.—Some plants of the *Lobelia*, such as *L. fulgens* and *L. speciosa*, make splendid objects when well grown; they require to be parted now, and each division, or single heart of the old plant, potted singly into a small pot, and then plunged in a hot-bed; the kind of soil is not material till they get larger. As the young plants begin to grow in the warm frame, they must be removed to a colder situation, and gradually hardened to stand in a green-house; and they must also be re-potted when they require it. For some months yet, they may be kept with advantage in the pits and frames.

Chimney Campanula.—This plant (*Campanula pyramidalis*) may readily be multiplied to any extent by planting portions of the roots, an inch or so long, in pots, and placing them in heat: the old plants require shifting occasionally.

Siphocampylus bicolor.—Among winter-flowering green-house plants there is nothing more gay, and certainly useful, than this *Siphocampylus*, which is not half so commonly grown with this view as it ought to be: it forms upright shoots, four or five feet long, with leaves like those of a peach-tree, from the axils of each of which, throughout nearly its whole length, one of its pretty yellow and red tubular lobelia-like flowers are produced, and remain a long while in perfection. It should now be started to grow, and encouraged to make strong shoots during summer.

Watering.—A general caution may be given as to watering plants in pots. Be certain when you do water, that it is effectual, and that the whole mass of soil is moistened: the surface often appears moist, when below it is quite like dust; and nothing can be worse for the plants.

Heath-House.—*Ericas*, &c.—The potting of the plants may now be more fully proceeded with: let it not, however, be a general indiscriminate shifting of the whole collection, but only those which are in a condition to require it, by having their pots moderately filled with roots; the potting of others which are less advanced in this respect must be deferred

until a later period in the season. In potting heaths—or indeed specimen plants of all kinds which are regarded as being of value—use only such soil as is rough, open, and fibrous, and always use it in a rough state, in lumps of greater or less size, according to the size of the pots which are employed. Among the soil at the time of potting introduce a quantity of rather large lumps of charcoal, besides having the bottoms of the pots well drained with rubble, broken crocks, or whatever material of a porous nature may happen to be at hand for use. For some time after they have been potted, all plants require proportionately less water; and this rule continues in force until the new soil becomes intersected with the young roots. Large plants seldom require shifting more than once in the year, and this should be done during the summer, just at the time when each particular kind is just about to renew its growth.

Watering.—Except in the cases just alluded to, of newly-potted plants, in which watering must be done very cautiously indeed until the roots get into the new soil, the plants will require at this season to be more liberally watered. Large plants of heaths, as well as other plants growing in the same kind of soil, are very liable to get much drier in the interior of the mass of earth, than the exterior surface would lead one to expect. To this state of things the loss of many fine specimens must be referred. It is therefore of the utmost importance to be sure that, in the case of every plant, this is not the case, but that the soil is thoroughly and evenly moistened throughout. When soil of the kind used for these plants is once allowed to become dried in the interior, it is very difficult to get it again thoroughly moistened, the water applied being apt to pass off by the sides of the pot, instead of penetrating throughout the mass.

Temperature, &c.—From 40 degs. as a maximum night temperature, to 45 or 50 degs. in the daytime, will be sufficient. Air should be given both night and day, but not so as to cause drying or chilling draughts.

Pruning.—To keep the plants bushy, so as to form them into neat and handsome specimens, the stopping of the strong shoots must not be neglected; nor should it be delayed until they have grown to too great a length, for they would thus expend much of the energy of the plant in a useless manner, that might have been turned to a more profitable account.

Azaleas.—The greater part of these will now be advancing to a forward state as regards blooming, and it is of very great importance to keep them regularly watered, for, if they are allowed to get dry, the blossom buds will many of them fall off. The plants

that have been slightly forced into bloom, and are now gone past, must be placed in a temperature somewhat warmer and moister than that of the heath-house, but less so than the plant stove, where they must be kept till they have made their growth, and they may then be hardened off in the green-house, and, finally, in the summer, set out of doors for a time. When it is made an object to have them early in bloom, the same plants should be selected next year to be slightly accelerated.

New Holland and Cape plants, generally, which are kept in this house, require the same treatment as the heaths. Pot any that need it, and be very attentive in watering.

CAMELLIA-HOUSE.—Most if not all the Camellias will now be past flowering, and the present is a good opportunity to see to the shifting of all such as require it; to examine and make perfect the drainage of others not requiring to be repotted, and to renew the surface of the soil; and then to subject the house to a course of treatment adapted generally to the plants while making their annual growth. Some very successful growers pot in autumn, but we prefer to do it immediately the flowering is past, and before the plants make their growth. For this purpose use pure turfy loam, well drained and mixed with charcoal, for all the larger plants that are required to bloom freely without growing very much; and the same with a mixture of peat earth and leaf mould, if they are required to make free growth. Consult what is stated at p. 55.

Japan Lilies.—The beautiful varieties of *Lilium lancifolium*, and some of the allied species, make splendid conservatory plants for the autumn, and come in earlier than the *Chrysanthemums*. Pot theroots now in their blooming-pots, (which if the bulb is large, must be large also.) and let them grow very slowly out-doors, or in a cold frame, all the summer.

Temperature, &c.—For the purpose just mentioned, a temperature of from 60 to 65 degs. or upwards in the daytime is required, but the night temperature ought to range 8 or 10 degs. lower. A moist atmosphere is required, by keeping the plants, and the walls and pathways, and flues or pipes, frequently syringed. Admit air when there is an opportunity, but be careful not to lower the temperature too much, nor to subject the plants to cold draughts. A house kept in this state, is suitable for the growth of the Indian Azaleas, just mentioned.

Grafting and Inarching Camellias, Rhododendrons, Indian Azaleas, and other plants, may be done at this season, and the atmosphere of the Camellia-house will be suitable for the operation. The single red Camellia

is usually employed as a stock for the finer varieties, (which are also most usually budded;) for Rhododendrons, any of the common kinds may be used; and Azaleas do best when worked on young, healthy, well rooted plants of *Rhododendron ponticum*. Any of the woody green-house plants may be increased in the same way, and this house suits for all these purposes. If it can be managed, it is as well to have a hand-glass set over them until the parts are united.

GERANIUM-HOUSE. *Pelargoniums.*—The plants intended for early flowering must not be stopped after this time. Others for succession may be stopped yet for some time to come. The smaller succession plants, for flowering during June, July, and August, should be potted in succession. Some cuttings, if planted now, and kept growing in cool frames during the summer, taking off all the flower-buds which are produced, as soon as they can be detected, and removing them to the house in September, will produce a supply of bloom during the two or three following months.

Temperature, &c.—The temperature may range at 40 degrees by night, and from 45 to 55 by day. Plenty of fresh air should be admitted; and keep the house moderately damp. Refer to p. 54.

Training, &c.—The plants of different kinds grown in this house for the most part require to have their branches disposed in a somewhat artificial manner, and to be retained in the desired position by stakes; as few of the latter as possible should be employed. The plants should be frequently turned, so as not to be drawn to one side; and not allowed to become crowded, so that they may be perfect from the top to the bottom.

Seedlings.—Seedlings, both of *Pelargoniums*, *Cinerarias*, *Calceolarias*, *Fuchsias*, &c., raised in autumn—at which time they ought to have been sown—should have their final shift previous to flowering, using the kind of compost already recommended for the different plants: it is of no use to be encumbered with seedlings in very large pots; five or six-inch ones will in most cases be sufficient to test the merit of the flowers, and, if any appear promising, they should be grown into specimens the following year before any judgment is formed of their value.

Calceolarias.—Some of the smaller and later blooming plants should be repotted, to follow those which have been potted previously. Weak spindly premature flowering stems should be removed, and the bloom will be finer in consequence. They require careful staking. Except in particular cases, propagation at this time of year is unnecessary. Get some of the new striped race of these

flowers, and use every endeavour to improve on them.

Fuchsias.—The chief attentions required by these, are to pot them as often as they require it, and to keep them well supplied with water, and air, and light: nature will do the rest. No plants are more easily grown, and none are more beautiful. Apart from florists' fancies, choose the following sorts for decorative purposes; they are unequalled:—*F. globosa* (not major); *formosa elegans*; *microphylla*; *reflexa*; *Venus viatrix*; and *corymbiflora*: the latter requires a good deal of room, being a large grower, but towards the end of the summer becomes magnificent.

Cinerarias.—If there are any late plants of this now deservedly favourite family, let them be shifted for late flowering; the others, as they finish blooming, are to be cut back and set in the cold frames for the present. Look out for seeds of these plants, and be careful in hybridizing them. A new variety, called *Conqueror*, raised by Mr. Ivery, of Peckham, has fine deep clear blue flowers, of excellent form, and is one of the best we have yet seen of this family.

Thunbergias.—A few seeds of the different varieties of this very ornamental family of climbers, may be sown, to furnish flowering plants for the conservatory during summer and autumn.

Insects.—All the plants in this house—as indeed are soft wooded plants generally—are very subject to the attacks of green fly, or plant louse (*Aphis*), which spreads very rapidly unless timely checked: there is no better plan of keeping them under, than by adopting tobacco fumigations. Sprinkling the plants with diluted tobacco liquor may be adopted, if the smell of the smoke is objected to.

THE PLANT STOVE.

Temperature, &c.—The temperature of this house may range from 55 to 60 degrees at night, and from 60 to 70 degrees by day; 80, and even 90, degrees by sun heat being rather beneficial than otherwise. Give air cautiously, so as not to lower the temperature suddenly, nor to chill the plants, for now they ought to grow away at a rail-road pace; and if they are kept thinly placed, so as to get abundance of light on all sides, no fear need be entertained from rapid growth. The atmosphere requires to be kept well moistened by throwing down water, and sprinkling the walls and other available spaces, in order to cause a vapour to arise; the plants are also to be frequently syringed.

Potting.—As the growth is expected to be rapid, the potting of the plants as they require it must not be neglected, for if left too long the plants get checked for a time; and

as in this house a good deal of moisture is necessarily employed, it is more than ever necessary that the drainage should be rendered perfect. Charcoal is a fine material for drainage, and also for mixing rather largely among the soil, especially when anything like what is called the "one-shift system" is adopted.

Insects.—Persevere in the means already pointed out (pp. 6, 10, 12, 51, 60,) for the perfect destruction and eradication of these pests.

Watering.—Most of the plants in this house will require constant attention in watering: indeed, all that are not in a state of rest must be continually looked at, and such as may be getting dry must be supplied with a greater or less proportion. Tepid water should always be used.

Climbers.—Owing to the rapid growth of these plants in the stimulating atmosphere of a plant-stove, they require unremitting attention, in pruning away such parts as are not required, and in carefully training in the remainder in whatever position it may be intended to occupy, whether up the rafters or on detached fancy trellises. When climbing plants are once allowed to run wild, it is difficult to get them properly arranged without their suffering some damage.

Woody Plants.—The ligneous stove plants, or shrubs, may now generally be excited into growth, by giving them more moisture, placing them in a warmer, and in a light position in the house, and potting them if necessary. Those which have been already induced to grow, must be kept growing by a constant supply of the same kind of stimulants.

Herbaceous Plants, such as *Gesneras*, *Gloxinias*, &c., which are already growing, require plenty of water; and if large specimens are required, they must be put into larger pots, being careful not to injure the roots. If there are any plants not yet excited, they should now be brought out, and will furnish a later supply of bloom.

Achimenes.—Where the caterpillar-like roots of these plants were started in pans or wide pots, closely placed together, they may now be transplanted two or three together; or they may be grown singly if preferred. These plants admit of being grown in a variety of ways, as, in wide pots, in shallow pans, in baskets, with moss or turfy peat, suspended, or otherwise. Beautiful dwarf successional blooming plants of *A. pedunculata*, and *A. hirsuta*, which are naturally rather tall growers, may be had by planting cuttings now of the side-shoots, and this may be repeated at intervals during the summer both with these and the others.

Bulbs.—Stove bulbs, such as *Amaryllis*, *Crimum*, &c., should be potted, and induced

to grow, so that, whether they flower or not, they may have the best part of one season to perfect their foliage in: this is the most likely means of inducing them to flower next year.

Begonias.—Many of the *Begonias*, if potted now, and grown freely, will flower beautifully towards the end of summer, and during the autumn.

Gloriosa superba.—The roots of this singular plant should be potted, and set in a slight bottom heat in the stove; they require a moderately rich light loamy soil, and plenty of heat and moisture.

Stapelias, and other stove succulents, such as the Cacti, should be potted, and grown in a close pit, or in a warm and moist part of the stove for a few weeks, when their growth must be ripened in a drier cooler place, ready to flower next season, which they will do on the strong shoots made during the summer, if they are well matured.

Clerodendrons should be removed to the forcing-house or stove, (having been kept cool and comparatively dry all the winter,) in order to get cuttings, from which young plants, to bloom in the summer of next year, may be raised; these young plants are to be grown freely through the summer, kept cool in winter, cut down in spring, and again liberally treated in the stove: they then flower magnificently. Old plants may be cut down now and potted, and placed in a favourable position for growing, and they will bloom towards autumn.

ORCHIDACEOUS HOUSE.

FROM March to September, or even October, may be regarded as the general growing season for this family of plants, during which time, some, at least, will be in active progress. The plants which have been in a dormant state all through the winter ought, indeed, to be excited to grow soon, or the very best part of the year will be lost to them: those which commence growing later, up to the period named above, are such as have been put to rest at later periods during the winter and spring. Late and weakly plants should not be excited just yet.

Potting.—The proper season for potting and shifting these plants is when they are about commencing their growth; and, as many will now be in that state, the renewing of the pots, soil, blocks, baskets, &c., in or on which they may have been growing, will have to be attended to. The manner of potting was explained at p. 58, together with some of the other contrivances adopted for growing these plants.

Temperature, &c.—A mean temperature of from 65 to 70 degrees of *applied* heat, falling

5 or more degrees at night, and rising 8 or 10 degrees by sun heat, will be suitable for the plants when one house only is employed; and in this case, as before observed, the growing plants should be kept at the warmest, and the dormant ones at the coolest end. Where there are two houses made use of, the warmest one—allotted to the Indian species—may range from 70 to 75 degrees, and somewhat higher by sun-heat; and from 60 to 65 degrees at night. The coolest one, which will also serve as a resting house, may range from 6 to 8, or even 10 degrees lower, both night and day. The growing plants require to have a strong degree of moisture maintained in conjunction with the increased heat, so that, in fact, the atmosphere may be charged with warm impalpable vapour; for this purpose, every available evaporating surface must be brought into requisition, and the plants too, (especially those on blocks or in baskets,) as well as the floors, walls, and pipes, may be syringed freely and frequently, provided the water is not roughly dashed over the former, but passed through a fine syringe, so as to resemble light vapour or dew. But very little ventilation will be required yet; nor, unless the weather is remarkably hot, need the shading of the house be commenced.

Watering.—The growing plants require to be liberally watered, but it should always be used in a tepid state. The resting plants, of course, are neither to be watered nor syringed.

Imported Plants.—This is an excellent season to receive plants which have been imported, as they may be induced to grow a little during the summer, and so become established. When imported plants are first received they usually look dry, and nearly dead, but if well preserved they will recover by proper treatment. They are not to be potted, and at once subjected to a hot moist heat, but laid out in the house in any convenient place, where the atmosphere is not very moist: old basket lids are excellent things to lay them on, as they are easily removed; in this state they slowly imbibe moisture and become excited, and as soon as indications of growth are perceived they may be potted, but still guardedly treated till they get into a vigorous condition.

Sobralia.—These may be potted, and treated so as to make them grow freely; and they will flower in September and October.

Catasetum, *Cycnoches*, and allied plants, which have been rested, will probably be showing signs of growth, and may be potted, and get more water, which must not however be suffered to lodge about the young shoots just breaking forth.

Phalænopsis amabilis.—This Indian species requires a strong moist heat; it may be pro-

perly arranged on its block or billet of wood, and set to grow freely till November; the syringe may be frequently used to it.

Vanda, *Aerides*, *Saccolabium*, and the allied most beautiful Orchids, require from 70 to 80, or even 90 degrees of heat, when growing, which they will do soon; they also require plenty of moisture.

Maxillaria, *Anguloa*, *Lycaste*, &c., require less heat, and, being in a growing condition, require to be attended, with that object in view.

Barheria, *Epidendrum*, *Oncidium*, &c., must be similarly treated.

Dendrobiums should be placed at the warmest end of the house; they will soon begin to grow.

FORCING HOUSE FOR FLOWERS.

Temperature.—As the days lengthen so the heat in this structure must be increased, to keep the temperature in strict accordance with the increased excitability of the plants, consequent on the longer duration of light; but such additional heat must not be so great as to draw or weaken the plants; while at night it may descend as low as 50 degrees, in order to strengthen the plants, and enable them to meet the next day's excitement.

Watering.—The supply of water to almost all plants being forced should also be increased, especially in bright weather, and very particular attention should be paid to keeping the atmosphere in a regular mild humid state, especially in bright, cold, windy weather. The application of water to the roots should be done chiefly in the morning, giving comparatively little at night, in order that the plants may not be weakened by taking up too much of it during the hours of darkness, when they cannot properly assimilate their food.

Insects.—It is almost needless to insist on the necessity of continual watchfulness, in order to keep under these troublesome pests which seem to particularly affect plants under artificial treatment: but as the season advances so do they become more numerous, and require constant vigilance to destroy them, or check their ravages. Pursue the course previously recommended for the green-fly whenever it appears. The thrip and red spider will also become troublesome if a regular moist heat, and syringing the plants once or twice a day, be neglected. To get rid of these insects the flues or pipes should be sprinkled or washed with flour of sulphur, and even the plants dusted on the under sides of their leaves, in particular if the insects multiply very rapidly, which however can hardly be the case if a moist temperature is properly

maintained. Tobacco-smoke is also of great use in destroying the thrip.

Roses.—Introduce a fresh supply to succeed those brought in last month; and towards the end of the month a few more may be placed in heat, some of which will almost last until those in the open ground are in flower. Attend particularly to the grubs attacking the buds and leaves.

American plants.—Keep up the supply by introducing fresh plants as those in bloom are removed. Be particular that they never become dry at the root, as their fibres are so fine as to be damaged by very little dryness, and in that case the loss of flowers and leaves is generally the result.

Lilacs, *Deutzias*, and others, may also be brought forward, but will hardly be so much wanted now as earlier in the season, when few green-house plants were in flower.

Hydrangeas.—Introduce a succession, placing them in pans, and supplying them abundantly with moisture, and occasionally with manure-water.

Tuberoses should be kept in a good heat, and also where they may have the advantage of light and air, in order to keep them as dwarf as possible. Let a neat stake be put to them as soon as the flower stalk begins to elongate, so as to lessen the chances of its being broken.

Cacti.—Introduce a fresh supply of these gay plants, gradually increasing the quantity of water, and occasionally giving them some manure-water as they advance in growth. One of the best kinds of manure-water for this purpose is made by putting a quantity of pigeon's dung into a tub or barrel, and filling it up with water; stir them together, and use the liquid when it becomes clear. When the water becomes pale, and is not of a clear light brown colour, put in more dung, and by this means a good supply is easily maintained, which will be found very useful in all departments of the garden as well as here in particular.

Lily of the Valley.—A few plants may be still introduced, in order to maintain a good supply. Keep them in the coolest part of the house, and let them be well watered.

Achimenes, *Gloxinias*, and allied plants, should be plunged near the glass, and keep them moist as they advance. Shift them to larger pots as the roots advance, and watch narrowly for thrip and red spider, which soon damage the soft succulent foliage of these plants.

Pinks and Carnations.—Continue to bring in fresh supplies of these plants as those previously introduced are removed. Place them in a cool part of the house, and examine closely for snails and slugs.

After treatment.—If a pit or frame is set apart for Roses, those plants may be shifted at once, reducing the balls and old roots, and repotting them in smaller pots, when they may be placed in the situation prepared for them, and kept close until they have made fresh roots, when air should be gradually and freely admitted to them, and they should be prepared for going out of doors when the season is sufficiently advanced. Lilacs, and most other woody plants which have been forced, may be treated in the same way, and may thus be kept at a convenient size for several years. All other forced plants should be protected in similar frames or pits, or be thrown away at once.

PITS AND FRAMES.

Tender annuals.—More tender annuals must be sown to follow those sown last month; the young plants must be well attended in potting in rich light soil, keeping them growing away in the frame, where the heat may range between 60 and 70 degrees. Tepid water must always be used to these delicate plants.

Half-hardy annuals.—A supply of these for planting out in the flower-garden must be sown in pans, pots, or boxes, placed in a frame, where there is a slight warmth, and the seedlings afterwards hardened off; or, what is less trouble, when a good many are wanted, is to make a bed, about a foot thick, of spent dung, covered with light soil, and protected by mats and hoops: the seeds are to be sown in rows, thinly, and the plants may remain here till planted out.

Dahlias.—The general stock may be planted in pots, or otherwise, and gently forwarded, ready to plant out in May.

Half-hardy plants.—Continue to follow the instructions given at p. 61, in preparing a full supply for planting out by-and-bye.

Alpine plants may be divided and repotted, using a light loamy soil for the principal number; five-inch pots for the larger ones, and three-inch for the smaller ones, will be large enough; it is often practised to put them all into the smaller size, for the sake of having them uniform.

WINDOW GARDENING.

Geraniums, Fuchsias, and similar plants, require all the light they can get, and to be moderately watered; if they stand in need of larger pots, they had better be repotted now before they get much advanced. Give them all the fresh air possible, but not by setting the window open close upon them, and subjecting them to a draught of cold air; it is better to put them out entirely, closing the window, when the weather is fine and mild

enough to admit of it. For other particulars refer to p. 62.

Ferns.—In shady situations the hardy Ferns may be grown with good success in the window, but if the atmosphere is frequently much charged with smoke they seldom do well, except they are covered by a glass. When covered with a clear transparent glass, even the delicate species succeed well, and are most interesting.

THE ROSE GARDEN.

Pruning.—Those who take delight in a succession of blooms as long as they can be produced, should, the first week in the month, prune one-half the summer Roses. By summer Roses, perhaps we should be considered to be using an improper term; but what we mean is, the rough-barked Roses that usually bloom in June, for one month pretty nearly sees the whole of the Cabbage or Moss Roses out of flower; and a great many of the same nature last hardly a month. By cutting them the first of the month, (and some people begin even in February,) the buds below the pruning begin to swell directly and push early. Let this pruning be done with judgment; first cut off the thin spindly branches close to where they spring from, for they are sure to be of no use for bloom or growth, and only weaken the root; then shorten the strong shoots according to the form you wish them to assume; the further back they are cut generally the stronger come the shoots: but if the present race of rose-growers commit one fault greater than another, it is that of cutting in too close when they prune, for they ought to have a proper regard to the form they wish the tree to take, and especially standards, which are too often cropped as if they were to form models of mops, instead of trees on a small scale. The proportions of these Rose-trees should be like those of an oak, an elm, or any other handsome tree; the head should be large in proportion to the height of the stem; the head should, when fully grown, be quite as large across as the stem is high from the ground to the bottom branches; therefore, in pruning, cut sparingly while the Rose is getting to its size, and, when once it has attained this, the branches that grow, from season to season, may be shortened to even a single eye, if desirable; but it may be taken as a general rule, that the less eyes left to grow, the more vigorous the growth. In directing the pruning of a certain number at the very beginning of this month, we wish it to be understood, that if the wood be strong you may leave on three or four eyes when you want branches, and you must be guided by your wants. Those that you now prune will be rather later than if they were not pruned

at all; so that if any present rather a pretty shape without pruning, they may be left to bloom as they are, and thus start a little a-head of the early pruned ones; but the object of pruning half now, and half, as we shall hereafter recommend, next month, is to have two complete seasons, for next month the buds nearer the ends of the branches will have advanced considerably, and those nearest the stem will have been retarded by the growth of the others: by pruning off all the buds which are so forward, and leaving only those which give hardly any indication of starting, this will throw them back a good month, and thus give you two complete seasons of the same kind of Rose, to say nothing of the different seasons at which many of these sorts come in flower; so that with care, and pruning some back early, and others late, a very continuous bloom may be secured with the various Roses. The principal pruning required by the China and Noisette kinds, is to cut out the small, spindly, weak shoots from all parts, and shorten the principal branches and shoots to the form you want them to assume; but weak thin shoots should never be allowed to remain on, for they cannot throw out strong growth, and they take away the strength from those which can. If the spring be very backward, and the buds of the briars have not begun to start, they may still be planted for stocks, but it is a forlorn hope when things are left past the proper season. Nothing but just getting possession of a place, and an attempt to save a season with some out of a number, can justify it. In pruning the tall-growing Roses for pillars, or walls, or fronts of houses, the small thin stuff should be cut clean out, and those strong enough to bear flowers should be shortened, except where you want the wood. If this be not well looked to, the thin shoots, which are only half-grown, and half-ripened, will often die back, and the wood gets blind and bare; whereas, by cutting any useless shoots away clean, stronger buds will come away from the base, and growth is maintained all over the stems, however tall. The new Rose, the Bridal-Wreath, is of rather a singular habit; we have seen a shoot twelve feet long, that flowered in large bunches of white flowers at every joint, from the one next the ground to the top; and it is not every Rose that will do this, although, by judicious pruning, much may be done. Roses, like many other things, if left to themselves, grow freely at the head, or near the top, and, unless they be checked by pruning, the stems get bare.

Climbing Roses.—Many Climbing Roses should be spurred from the bottom to the top, that is, the shoots cut into two or three eyes, more or less, according to the space they have

to occupy; and this attention to the work you wish a Rose to do, the space it has to cover, the shape you wish it to assume, is the more necessary, because the neglect is so general among all classes of gardeners.

Fastenings.—Looking well to the fastenings and stakes, treading the ground close about the roots, and removing all suckers and shoots of the stock, is merely routine business, which is necessary, but too often thought little of until it is forced upon us.

Roses in pots.—Roses forcing, small China Roses for bedding out, and cuttings ready to pot off, should be attended to, so as to keep them now upon the move. Look well over the previous month's directions, and do every thing that has been recommended and left undone.

Cuttings for grafting.—At the end of the month gather all your cuttings for grafting, the fresher they are the better, and the wood must be ripe. Those you have already got, if any, will not have been much the worse for keeping if they have been put in the ground, because Rose-cuttings will actually strike and do well; and as they cannot be much the worse while they are placed in the ground, why they will answer the purpose of grafting: but the present month is better for it than last, and as it is pruning month there is no difficulty about cuttings.

Seedling Roses.—Sow seeds in large pots or pans, in good rich soil, strewing them thinly, and just covering them with sifted mould; care must be taken that the seeds, when once sown, should never be thoroughly dry, for alternations of wet and dry would destroy them. In a large body of earth, such as that in a carnation pot, there will be enough moisture to preserve seed damp for a very long time. These should be set in a cold frame.

Seedlings of last year's sowing must be cleared of weeds, and if any of them are budded look well to them, and see that the stocks are freed from all shoots and buds of their own growth, as they will, if allowed to grow, greatly check the buds which are on them. If any seedlings of last year remain in the pans, and have not been planted out in pots singly, they should be potted now in size sixty, or left to plant out in the open ground in May. But as the bulk of them may be already so treated, or planted in the open beds, to be sheltered merely by litter, the only particular thing to attend to is the weeding, stirring the earth between them, and generally keeping them clean. Beware, too, of slugs and snails; if there be any in the neighbourhood; use all the remedies for catching them in the bed, and preventing others from entering them.

THE FLOWER GARDEN.

Anemones require to be protected by loose litter; they require this most specially when they are just coming through the surface. The covering must be removed every day. It is almost too late for planting.

Annuals.—Hardy annuals may be sown in the open ground, where they are to flower, or in beds, for transplanting. The half-hardy ones require to be aided by a little warmth and protection, and planted out when mild weather becomes settled.

Auriculas.—Do not purchase plants for exhibiting, after the first week of this month. Give them plenty of air, and keep them regularly watered, as they require it. Frost should be excluded, for, though hardy enough in their nature, it is apt to injure the rising bloom. If more than one "truss" shows, remove all but the strongest, and thin out the "pips," or buds, as early as it will admit of being done.

Biennials.—The seeds of biennial plants, such as Canterbury Bells, &c., may be sown towards the end of the month, to bloom early next year. Sow them thinly on *poor* soil, that they may not grow too freely this year: they will stand during next winter better for this care. Transplant for flowering those sown last year.

Caraganas, and the species of *Cytisus*, of dwarf prostrate habit, make beautiful dwarf drooping standards. The latter may be grafted on healthy young *laburnum* stocks; the former on those of *Caragana arborea*. There are a good many of our prostrate-growing shrubs may be rendered very ornamental by this means.

Carnations and *Picotees* require plenty of air, and must not be too liberally watered.

Dahlias.—Those roots which are not required to propagate young plants from, may be divided and potted, and set in a cold frame. Others may be planted out in the ground. If the crowns are three or four inches under the surface, frost will not hurt them, and they will not come up too early. The roots of seedlings may be treated in a similar way. As it is a somewhat general rule, that the strongest growing, among seedlings, are the worst, and weaker ones often prove better kinds, none of the weak unbloomed roots of seedlings should be thrown away, till their merit has been ascertained.

Evergreens may be transplanted now, but we prefer the early part of autumn. By attention to shading, mulching, and watering, evergreen shrubs may be transplanted successfully, at any time of the year, except the depth of winter.

Gentianella (*Gentiana acaulis*) may be

planted for edgings to flower borders; it forms an interesting plant for this purpose, when it has been allowed to get established for a year or two, and is very ornamental with its intense blue flowers. It does well in the shade.

Grafting.—The choice and rare ornamental trees and shrubs that are increased by these means, must be attended to this month. If not already done, the grafts should be cut, before they begin to start.

Gravel walks.—When these are made of good binding gravel, they may be rolled once or twice a week, when a little moist, and will be kept firm and smooth; but when the gravel is loose, and it is difficult to get it firm, if the gravel is turned up, and made quite wet, like puddle, and rolled down smooth, and no one allowed to go on it for three weeks or so, till it gets set, it will remain firm all the season: at least it is so with some loose gravels, and is worth trying with all.

Hyacinths and *Narcissus*.—The beds outdoors require to be protected, the same as Tulip beds, with hoops and mats. Forced bulbs, which have done blooming, should be hardened in a cold frame, and planted out next month in a warm sunny situation, where they may perfect their foliage. They will mature tolerably good bulbs for beds next year.

Lawns should be frequently rolled, the worm-cast spread about with a slender pole, when about half dry, and swept occasionally, as they may require. The sooner mowing is commenced after the grass begins growing the better; and much labour is saved, in this operation, by following it well up.

Mignonette.—Sow plenty of this in the borders when the ground is light, and also in pots, for turning out. There is seldom too much of this plant in a garden.

Pansies.—Plant out those kept through the winter in pots, and protect the plants, if there is necessity, by loose litter laid over them at night, and during cold winds. If there are any long shoots, cover them with soil to within an inch or two of their tops. Cuttings of choice varieties may be rooted in a slight hot-bed.

Perennials.—Many perennials require to be sown now, to bloom next year. Treat them as recommended for biennials. Perennial plants may be divided and transplanted during the early part of the month, but the sooner it is completed the better, if the weather is favourable. Transplant for flowering, those sown last year.

Polyanthuses and *Double Primroses* require attention similar to *Auriculas*, but they are more hardy. They are grown out of doors, and are taken up at the time of showing.

Propagate ornamental trees and shrubs of

all kinds, according to their respective natures, by cuttings, layering, or grafting.

Ranunculuses require the same treatment as *Anemones*.

Shrubs, generally, may be planted, but it is better to be finished as soon as possible; however, the weather must overrule this. It is better to wait a little for suitable weather, than to be in too much haste when it is unfavourable.

Thrift edgings may be taken up and replanted: unless this is done every two years, they are apt to get wide and unsightly. There is a variety with deep red flowers, which is much the prettiest.

Tigridias.—Bulbs of these ephemeral but showy plants may be planted in beds, in warm sheltered situations. They will flower later than those previously forwarded by heat. Seeds may also be sown.

Tulips.—These should have the soil pressed about their stems, when they are through the ground; and the protection of the plants from heavy rain and severe cold must not be neglected, if fine blooms are desired.

Turf may be laid, if necessary, but, if the weather is dry, it requires to be well and frequently watered.

THE KITCHEN-GARDEN.

It should be a rule to keep the soil well stirred, by deep hoeing, among all growing crops; not, be it remembered, to destroy weeds, for it should be done from time to time before weeds have had time to make their appearance. This is the foundation of good cultivation.

Artichokes.—Remove the litter, or rotten leaves, placed about these for protection, and dig them into the ground about the roots, as dressing.

Asparagus.—Sow seeds for a supply of young plants. Plant fresh beds for cutting, when required. The beds may contain four rows, a foot apart, with alleys of three feet between; sprinkle some salt on the beds, or water, when growing, with a salt solution. Lettuces, or similar light crops planted thinly, may be taken from the beds, and cauliflowers may be grown in the alleys. Fork over the established beds, and rake the surface neatly, but do not throw on large quantities of earth, which only increase the length of the blanched, tough, uneatable stalk. Successional beds must be made where a forced supply is required.

Basil, *Summer Savory*, *Knotted Marjoram*, and other tender aromatic pot-herbs, must be sown in warmth, and protected in frames, till May, when they may be planted out on a warm border, in light rich soil.

Beans.—Treat the same as peas.

Borage, and other hardy annual herbs, may be sown.

Brocoli.—A little seed of the earlier kinds may be sown on a warm border, if a variety of vegetables is preferred: otherwise, the cauliflower will be preferable.

Cabbages.—Earth up the largest plants, and sow a few seeds towards the end of the month, for successional plants. Plant out those in store beds.

Cardoons.—Sow a little seed towards the end of the month: let them have plenty of room, and plant them out in June.

Carrots.—Towards the end of the month, sow the principal crops, in drills fifteen inches apart, on light deeply-wrought ground. The long orange is a good sort for a main supply. A few of the early horn may be sown on slight warmth, for early use.

Cauliflowers.—The plants under hand-glasses require plenty of air. Those sown in heat last month must be pricked out, and hardened, previously to being planted in the open ground. Sow a few more of the *Walcheren*, for succession. Plant out the autumn-sown protected plants, inverting a flower-pot over them at night, if the weather is cold.

Celery.—Prick out the early sown plants, on a very slight hot-bed; and sow more seed for a general supply in a similar situation, that for a principal late crop towards the end of the month. The young plants are benefited by slight warmth at the root, but the top must not be confined.

Celeriac, or turnip-rooted celery.—Sow a little on a warm border. It is chiefly used in soups.

Chives.—These useful little plants are excellent substitutes for young onions, and may be grown without any trouble, being perennial, and perfectly hardy: they may be planted now.

Endive.—Get what may be yet remaining, blanched and used, for it will be less valued when lettuce gets plentiful. Treat the growing crops the same as lettuce.

Garlick and Shallots should be planted early in the month, if not done last month.

Herbs.—Replant, divide, and increase such of these as require it. Herbs should be collected in a compartment by themselves.

Jerusalem Artichokes.—Plant these in any back slip of ground. Usually a plot of these, like horseradish, will plant themselves, and the piece may be forked over every autumn, and the largest taken out for use, the smaller only being allowed to remain in the ground.

Kidney Beans can yet only be grown in hot-houses or frames. A few may be germinated in pots, or even in frames, to plant out, if the weather is mild, next month.

Leeks.—If these are in demand, sow some thickly for transplanting when large enough.

Lettuce.—Sow a little seed of the Brown Cos, in heat, and get the plants pricked out, and hardened off, to plant out on warm borders or sloping banks as soon as they are large enough: also sow some on a warm border. Lettuces should be sown a few at a time, and very often.

Mint.—Make new plantations of this useful herb; small portions of the roots should be planted in drills at six inches apart.

Mushrooms.—Collect short dung and horse-droppings, and get them into a heap, (which must be turned over every second day, to prevent it heating violently,) ready for forming into a ridge in some dry sheltered spot, or in a shed: the bed may be got ready when sufficient is collected, and the violent heat of the whole mass subsided into a steady genial warmth.

Nasturtiums, (*Tropæolum majus*, or Indian cress,) should be sown. It forms a fine summer hedge, and is very ornamental; the green seeds are used for pickles, and the flowers formerly in salads and for garnishing; the young leaves were also formerly used in salads.

New Zealand Spinach may be sown in heat, and a few plants planted out on a rich piece of ground. It is sometimes useful in affording variety in summer.

Onions.—Those sown last month may be transplanted; but be careful to plant on the surface. Sow the principal crops on well-prepared ground, in drills a foot apart.

Parsley.—If a good deal of parsley is required, a little may be sown; it makes good edgings for the kitchen-garden quarters. Select some of the best curled plants, and plant them out for seed.

Parsnips.—Sow towards the end of the month, in the same way as carrots.

Peas.—Very early peas are best obtained by sowing in pots in a warm place, and transplanting in the month during favourable weather, on a warm border. Continue successional sowings every two or three weeks, according to the demand, or when those previously sown have come up: draw the earth about those which are above ground, especially on the exposed side of the rows; it is a great protection. Stick those that require it.

Potatoes.—Plant the chief early and second early crops during this month. Use whole "seed," as the planted tubers are called, and do not plant too deeply. Those in frames require plenty of light and air.

Radishes and Salading may be sown every fortnight in frames, and on warm borders, in the latter place protected by loose litter, or, if the beds are small, by hoops and mats.

Red Beet.—A little seed may be sown

for an early supply towards the end of the month.

Salsafy and Scorzonera should be sown towards the end of the month in small quantities.

Savoy, Brussels sprouts, and Borecole should be sown in small quantities.

Sea Kale must be covered up in succession; likewise *Rhubarb*: if there is a forcing-house, both these may be grown under the stages in the dark: a mushroom-house suits them very well.

Silver Beet.—Sow a little to plant out, and blanch as celer. It forms an interesting addition to our vegetables.

Spinach.—Sow a little frequently—say once in two or three weeks, according to demand, all through the summer: it may be sown between the rows of peas.

Tomatos and Capsicums must be sown in heat, and treated for some time as tender annuals.

CUCUMBER AND MELON FRAMES.

Cucumbers.—Those who begin to plant out this month, must follow the directions given at p. 65. Plants in a free growing state must be stopped freely, or the frames will get crowded, and in this state the plants cannot be expected to bear satisfactorily. Whenever a fruit shows, pinch off the shoot beyond it as soon as the fruit blossom is set: continue to "stop" the shoots at every joint. Use tepid water in watering; and admit air somewhat freely, though cautiously. The heat of the bed must be kept up to an average of 70 or 75 degrees.

Melons.—Seeds of melons may be sown. Where there is a plant-stove, a few early ones may be grown in pots, and trained up the rafters. Except in requiring a stronger heat than cucumbers, their treatment does not materially differ. Do not stop them so incessantly, but at the same time the frames are not to be allowed to get crowded. When they begin to bloom and show fruit, get a sufficient number of blooms open at one time, and set to form a crop, and remove all straggling fruit blossoms both before and after; unless the fruit are nearly equal in this respect, the largest get the lead, and frequently the later blooms will not set at all.

FRUIT-GARDEN.

The ground between all plantations of fruits should be constantly stirred with crane-necked hoes, and no weeds suffered to grow among them.

Disbudding, or the taking off the superfluous buds of wall and other fruit trees, must be attended to; the choicer wall fruits especially deserve this care. It consists simply in

removing the *bud now*, instead of the shoot it would produce *by and by*, when it has helped to exhaust the tree; the fore-right, badly placed, and superfluous buds are those to be removed: do it with a sharp-pointed knife, and do not wound the shoots unnecessarily.

Figs. — The state of the weather must determine whether these may be entirely uncovered or not; much injury is often done them by ill-judged haste.

Filberts and other nuts may be propagated by layering.

Fork up, and stir the surface of the soil among all plantations of fruit-trees. The Dutch hoe should be kept constantly at work — not to cut up weeds, but to prevent them altogether.

Gooseberry and *Currant Trees*, if not already planted, should be done without delay. When the trees are coming out in leaf, watch for the caterpillars, and, if they are observed, sprinkle the tree sharply with *dry* wood ashes and soot, while the dew is on them in the morning. This must be done as soon as they appear.

Grafting. — Orchard fruits generally may be grafted during this month; it must be done before the buds get too forward; for this reason, it is necessary to cut the grafts some time before they are required to be used; the stocks may be in a growing condition. Cherries and plums are to be done first; then pears and apples.

Mulch newly-planted trees, especially where the roots are (as they should be) planted shallow.

Nailing. — Complete this operation, where it has been deferred, as early as possible, as the buds will now be getting forward, and will be liable to be knocked off, unless very carefully done.

Pears and Apples, when trained in the pendulous manner, if not already done, should have this training completed: it is usually and properly done earlier than this, in the leisure time of winter.

Raspberries. — New plantations may be made, but they will not bear this season.

Strawberries. — Runners planted in nursery beds in autumn, may now be planted permanently. When this fruit is forced, the plants after forcing, if hardened a little before exposing them, may be planted out, and will bear a few late fruit, and a full crop the following year. Get the beds hoed and weeded.

Vines. — Young vines may be raised from short cuttings of the last year's shoots: only one eye or bud should be left above ground, and all the other buds below removed before planting the cutting.

Wall-fruit trees. — All the tenderer of these must have their advancing buds protected, if

not done, by evergreen boughs, fern, straw-ropes, or mats, bunting, netting, thin canvas, or any other convenient material. Spruce-fir boughs, or woollen netting, are perhaps the two best.



CULTURE OF THE POLYANTHUS.

THE great difficulty in the cultivation of the Polyanthus is to get strong plants with single hearts, for the root is apt to throw up side shoots, which take from the strength of the principal one, and from each other. To obviate this, considerable pains must be taken to plant out only single hearts when the roots are parted after blooming, and also to remove all side shoots at their very first indication. Some varieties of the flower are all but useless for show, because of their disposition to space instead of strengthen, and the whole of them may easily be got into a bad state by carelessness. All the Polyanthus plants deteriorate by being allowed to grow and spread, for, instead of one good truss, they have a number of weak ones, not one of which would be good enough to exhibit singly. Under these circumstances we begin some directions for the growth of this florist's flower, by recommending the first choice to be of such plants only as have good strong hearts, and promise to give centre trusses only. The best time to choose such plants would be about February or March, by which time they develop themselves, and show pretty well what they will be. With regard to the choice of sorts, the Polyanthus is so far behind what we hope ere long to see it, that we cannot say much on behalf of a sufficient number for a collection. We must build our hopes on im-

provements to be made ourselves, and therefore say, by way of beginning, choose the following varieties, as many as you like of each, but take those with single hearts only: — Hitchin's Defiance, Clegg's Lord Crewe, Pearson's Alexander, Collins' Princess Royal, Buck's George IV., Clegg's Prince of Orange, Buckley's Captain Starkie, Sir Sydney Smith, Nicholson's King, Stead's Telegraph, Lord John Russell, Eskerley's Black and Gold, Coxe's Prince Regent, Turner's Bonaparte, Craiggy's Timandra, or Highland Mary, Collin's Prince Regent, Nicholson's Bang Europe, Craiggy's Bertrand, Craiggy's Britannia. With good plants of these to begin with, we can compete with any flowers out, but they will require care. The plants must be reared in pots, for that is the only way to keep them for sale; when we have them we can plant them out, or continue them as they are, whichever is necessary. If the pots are full of roots, prepare a bed of good compost in a shady situation, where only the morning sun shines on it; let the compost be, if possible, that which comes from rotted turfs, mixed with about one-third cow or horse-dung, rotted fairly into mould. Mix this well together a good nine inches deep, and into this turn out the balls of earth whole, without disturbing any of the fibres. If however, the pots are not full of roots, but on the contrary there is plenty of room for them to grow, they had better remain in their pots. But, among other points to look to in choosing plants, that of seeing that they are well established in the pots is essential, and this can only be known by the firmness of the plant in the pot, or by turning out the ball to see the roots have reached the side. If they fairly show themselves, however little, and they are in good sized pots, they may be considered established; but if they are in small ones their roots may easily be made to reach the side by spreading them, but such plants will do no good. To be of any real service, they should be autumn-shifted, and have grown considerably in their pots, and if they have filled them with roots so much the better. We must keep up the management both ways: supposing them to be intended for planting out, they should stand in the bed nine inches apart every way, and be planted as deep as they were in their pots; indeed, the old surface of the ball of earth in the pot should be just covered with the new soil, so that both beds should be levelled and appear alike. As we suppose this to be the end of February, or some way into March, when the weather rapidly changes from mild to severe, it will be necessary to cover them with light litter of some kind, such as peas-haulm, or broken straw, for if laid on as it comes from the truss it

would be too heavy and close; this covering should be on at night if there be the slightest chance of a frost, and be taken off at day-light if the weather be mild. The Polyanthus is by no means a tender plant; there is a very great doubt on the minds of some whether a covering is necessary at all, but our experience tells us that it is easy to damage the incipient flower of the most hardy thing in nature; and as these flowers may be wanted for seed, or even for exhibition, no chance should be thrown away. The open nature of peas-haulm, or straw, when it has been bent and broken, is such as to admit air and light, and yet to protect against a good deal of frost. In this way must the Polyanthus be seen right up to its bloom; and as the truss rises, the protection must be the more certainly attended to; but, besides this, the plant must be examined to see that there are no side shoots taking any prominent growth, for if there be any, they must be removed before they grow enough to draw any strength from the main truss, or from the heart of the plant before the truss appears. When the flowers are about to open, small hand-glasses may be used to protect them; and if the beds are necessarily where the sun can reach the plants in the heat of the day artificial shade must be used. If the flowers are not wanted for show, save only the handsomest pip of each plant, and cut away the remainder; and do not put the glass over it unless it be frosty or at dusk, nor cover nor shade it except when there is frost, for that is not favourable for seeding. As soon as a single handsome pip has set its seed, pinch or cut away any other buds and flower, to throw all the strength into the single pod; and having saved a pod from the most perfect flower of each variety, or of such varieties as you think worth the trouble, you have only to attend properly to the plants you raise from them, and may fairly expect some novelty or excellence to reward you for the trouble. But we have now to take the case of the plants not being so well established as you like: in this case you must place them all under glass in their present pots, giving them moderate moisture, plenty of air, and throwing something over these frames at night to prevent a frost from checking them, which, as the only hope you have of blooming them depends on their winter growth, would be very serious. As soon as the roots have reached the sides of the pot, and begin to mat, they should be removed into some of a larger size; but if they are already in thirty-two's they must be continued in the old ones, because thirty-two sized pots are as large as they can be well shown in. They must be kept from flagging for want of water, but must not be kept wet. If any of the pots

look always wet as compared with the rest, you may conclude the soil is bad, or the drainage not free; and you must examine, by turning the ball out of the pot, what state the crocks or other drainage is in. If, as is very likely, you find them all stopped up with soil, break them all away from the ball without damaging the fibres, and put new dry ones in the pot about the same height, put a little dry soil on the top, but not too much, and return the ball to the pot as nearly in the same place as possible, that is, no deeper nor shallower, but of the two it had better be raised a little than lowered. Sometimes the stoppage of the water may be found to be caused by the hole at the bottom of the pot alone being clogged up, and the drainage inside open enough; in this case the hole must be cleared, and the crocks, or whatever open stuff may be used for the purpose, should be replaced. The earth of the pot need not be disturbed if you examine the hole first, as the clearing of that may be all that is wanted; and a day or two will show whether the soil dries any better than it did. As the trusses of bloom rise you will have to remove all but the strongest; but if you have been careful to remove any side growth when it first appeared this cannot often happen; it is very rare to have two trusses come up in the centre or heart of the plant. As the buds swell, you have only to consider the purpose for which you want the bloom; if for seed, the buds may be reduced to two or three as soon as you see which is likely to be the strongest; and eventually you may do as recommended for out-of-doors plants—leave only one, but that must be perfect. If, on the contrary, you want the flower for show, there ought to be as many buds left on the truss as the plant, from its strength, will carry well. If the stem be strong, ten or a dozen flowers could bloom well. In the country they reduce them generally to five of the best they can select; however, less than seven will not make a handsome truss of any thing; and if there be strength to carry seven we should reduce them to that number as soon as they were forward enough to enable us to select the best. There is nothing now to do but to shade them from the heat of the mid-day sun, and give them all the air we can in mild weather. When the flowers have nearly opened, they must have no sun at all, nor must cold winds be allowed to blow on them. Having now brought all our supposed new collection to flower, and seeded, or shown them, we may turn those in pots, into the open border; those in pots may be allowed to give a pod of seed each, and have all the other pips cut off. They will require well watering while they perfect the seed; and when this is gathered let them grow freely

until the middle of July, when they must be taken up, and each separate variety be carefully parted into as many pieces as there are hearts, and be planted out in such a border as we have described, nine inches apart every way; or, if it be more convenient, in rows a foot apart, the plants being only six inches apart in the rows; these have to be kept clear from weeds, have plenty of water, and be examined frequently to ascertain that there are no side-shoots coming, or to remove them if any appear. There may be very few come so strong as we like, but a very moderate plant of one heart will give a better bloom than a large one formed of more than one heart, as all Polyanthuses must be shown with a single truss on a single stem, and therefore, for the purpose of exhibition, all side-growths are useless, and even mischievous; but if you want to propagate them, of course the more there are the better they will answer the end in view. In the autumn, we have a choice of the two modes of getting them through the winter: in one, by continuing them in the open border; the other, by potting them. We prefer the border until they are actually in flower. The only protection we should give them would be, as we have directed with the first plants, peas haulm, or broken loose straw, laid on at night, and taken off in the morning, unless it be frosty, in which case it should remain on. As the blooms rise, let those which are strong enough for exhibiting be covered with blooming glasses, propped up with bricks three or four inches from the ground, and let there be straw all round to protect them, three or four inches. It is this which makes us prefer the nine-inch distance to the six; it gives room for litter all round the vacancy, and all round the glass also, the full height; indeed, at night, glass and all should be covered, to protect the flowers from frost; but, as every plant will not be fit for showing, six inches may in general be found sufficient. Presuming the flower to be all we want for showing, the only difficulty remaining is that of potting it. To do this well, the ground must be literally soaked; a large ball of earth must be released by cutting round it at sufficient distance to avoid all the fibres, and then the ball may be raised with the spade. You will be able to reduce this ball to the size of a thirty-two pot without hurting the roots if you are careful; when you have done this, put some broken potsherds or crocks at the bottom of the pot, and enough compost on them to bring the plant to a proper level, and before you attempt to put in the ball of earth, convince yourself it is small enough to go in the pot freely, and let some new compost go in all round it; once assured of this, and that it will rest at a proper height, take it up with

both hands, and drop it in its place; fill up with dry sifted compost, that it may go down all round, and fill up the vacancy between the ball and the pot; this done, let the pot stand in water up to the brim, till the new and its own compost are completely soaked, when it may stand in the shade until it has drained well again; and the plant will not flag at all for the whole period it is wanted for exhibition. If you determine to grow them in pots, prepare your compost as before directed, get your pots of the size thirty-two, and fill one-third with crocks, put some compost on them, and raise the plants from the ground without breaking the fibres, but do not wet the ground, as in the case of moving them in bloom; let the fibres be rather spread on the compost, which must be heaped up like a cone inside the pot, until it is a right height to keep the plant in its proper station, and add enough on and among the roots to fill the pot up well, the collar of the plant, which is the under part of the lower leaves, being even with the top surface, and, considering that it sinks a trifle, this should be even with the top edge of the pot; by knocking the bottom of the pot gently on the potting table or bench two or three times, the compost will be settled well about the roots, and they are ready for placing in the frame, when they should be liberally watered through a fine rose, so as not to disturb the surface of the soil; and great care should be taken that this watering is effectual, that is, that it wets every part of the compost all through the pot; more plants have been ruined by scanty waterings than by all other sorts of mismanagement combined; slight watering only moistens the surface and an inch or so below it, and this does more harm than good, the fibres lower down get no nourishment, the plant only gets a limited nourishment from the upper roots, and, without actually flagging, it dwindles, or rather, does not advance, and people wonder why. In stoves, green-houses, or pits, slight watering is ruinous. When plants are said not to require much water, it should be understood as meaning seldom watering; but watering, if given at all, should moisten every grain of soil that the plant grows in, and even drain away, and it should not be watered at all until it wants moisture. Rain-water is always the best; river-water next; spring-water ought to be long exposed to the air before it is used, for it is never desirable; it is always more cold, and mostly deficient of those properties which exposure to the air can alone give. Once conveyed to the frames, we leave them to the management recommended for wintering the plants in the first instance.

We now come to the raising of plants from seed; and this, although simple enough with

attention, is rarely undertaken with the care it deserves; chiefly because the seed is plentiful, the raisers are sure to have plenty, however careless they are, and they never once calculate that those lost, however few they may be, are more likely to be good than those which brave the bad management. But, in all probability, the fact of saving but one pod of seed where they might save half-a-dozen or more, may induce more painstaking in the raising of seedlings; and the fact of every seed being saved from the best pip may enhance the value in the eyes of the owners. It has been customary for the old florists, and some of the modern ones, to sow annually seed in autumn. We have done this; but we are quite certain that the loss of some by this plan is inevitable. It is true, that it sometimes lies in the ground a considerable period, and the autumn-sown frequently does not vegetate till the spring. We prefer sowing in boxes, or large-mouthed pots, very thinly, in March, till which time we keep the seeds from the air, and if possible in their pods, as they preserve better. Having sown them very thinly in sifted compost, we sift a thin coat of compost over them, sufficient to cover them completely, but no more. From the time they are sown, we keep them moist, but not wet; cool, but not frosted; in a cold frame in which Camellias and Azalea indica are kept, or in a greenhouse, where there are plants which cannot stand frost, or even out of doors, if there be hand-glasses and occasional litter to keep off frost and harsh winds, the seed will germinate freely; and the same treatment will do until the plants have three or four rough leaves, when they should be pricked out, an inch apart, in good large pots, which may then be placed in a frame, for the convenience of shading from the hot sun and keeping off heavy rains, which would disturb the plants; here they may grow till they are touching one another, when a bed may be made up for them in the open ground, and they may be planted out, six inches apart, all over it. They will be large enough to require no other care than watering occasionally till the autumn, when they must be subjected to the frame treatment in pots, or the out-of-door management, with temporary covering, by means of litter, as in the case of old plants. When they bloom, you must judge of their qualities by the ordinary rules laid down and acted upon by florists, throwing aside all that are worse than those they were raised from, and preserving the few, for there may be very few indeed, that are as good or better. These must be treated like the established varieties we have already referred to. There is, however, one subject upon which a good deal might be said, although it does not affect all places or persons. The

enemies to the Polyanthus are numerous, but the slug, snail, and red spider, are the universal pests; the two former attack them in good health, the latter only when they are neglected and sickly. If our directions about water and air are strictly attended to, there is no danger of the red spider; but if the plants once suffer from irregularity in this matter—if they receive any check from only partially moistening the compost—it is almost sure to attack them; they require to be well watered when watered at all; to be shaded from violent sun, and, if in pots, protected from chilling winds and heavy rains. This will always keep them in health, and the red spider, which is rather the effect than the cause of sickness, will not trouble you. Not so, however, with snails and slugs; they attack and destroy almost in a night, and there is scarcely a preventative that will last long; a ridge of lime, frequently renewed, will keep them from the bed, if it be surrounded, but there may be many, even in the ground; the destruction of the whole is the only possible security. Lay cabbage and lettuce leaves on the surface, between the rows and plants; examine them every morning, and destroy all you find on them; frequently rake the surface with a shallow rake, for they do not go low down, and this either disturbs them, or fills up their holes, in both of which operations many suffer. This, and trapping them with leaves, will soon clear an infested bed, if others are prevented from coming to it; but the best and most effectual way of doing this is to set in earnest about clearing the neighbouring beds also. If there be any hedge which harbours them, the bottom should be cleared from weeds, and whatever else chokes it up; and if there be a bank or ditch, the weeds should be taken away, and the place cleaned, so as to destroy the principal harbour. The most perplexing thing is when the opposite side forms the harbour for them, for then we can do nothing but endeavour to stop them out. Our worst enemy was a dwarf wall, covered with ivy on the side that we had no control of, and where they congregated by thousands, and all we could do was to constantly place lime at the foot of the wall, so that for one foot the ground was lost to us; here we frequently found them dead; but more often, by an early visit in the morning, we captured great numbers on the wall, probably on their way back after trying the experiment of emigrating. It may be very well to protect one kind of vegetation by giving these pests another that they like better, but the only safety is in their destruction, and perseverance will do a good deal. Polyanthuses not only suffer in appearance by the depredations of slugs and snails, but the health of the plant is injured—the growth of

what they leave is checked by the loss of what they have eaten; again, they are sure to take the younger portion of the leaves, and attack the truss of bloom itself, if they can find it. Devise, therefore, any kind of means to entrap and destroy them, nor neglect them an hour till you have got rid of them; you may then calculate on growing Polyanthuses in health, blooming them well, and exhibiting them to advantage.

THE WEATHER, NATURAL HISTORY, AND COUNTRY OPERATIONS, AT FOO-CHOW-FOO.

By G. Tradescant Lay, Esq.

THE following interesting account of the weather and other subjects, during a four months' observation in China, has been considered of sufficient importance to occupy a prominent place in the last part of the *Transactions of the Horticultural Society*. And it appears that for the opportunity of publishing it, the Society is indebted to Her Majesty's Secretary of State for Foreign Affairs, to whom it was transmitted by His Excellency J. S. Davis, Governor of Hong Kong. In the present state of our communications with China, all facts relating to the climate and natural productions of that empire are of great interest; and most especially to the Horticultural Society, now that Mr. Fortune has been stationed in China for the purpose of collecting seeds and plants.

We have not adopted the tabular form in which it was published in the *Transactions*, preferring rather to place the facts before our readers in the most plain and intelligible shape, and disposing of each subject separately. We are indebted to one of our contributors, who is a Fellow of the Society, and who feels that he is showing the extensive resources of that establishment, while imparting to the great mass of our readers information of deep interest, connected with a portion of the globe hitherto little known, and excepting for its staple productions in universal use, but little heard of, and less understood. Mr. Lay is Her Majesty's Consul at *Foo-chow-foo*, and therefore, had the best possible opportunities of collecting officially the particulars which he has kept in the form of a journal.

JULY.

THERMOMETER.—1st. In the shade, max. 100 degrees; min. 80 degrees. The mercurial column attains its greatest altitude, 2-3 P.M., its minimum about four o'clock A.M., when it is stationary till sunrise, the ascent and descent gradual. The maximum occurred in the middle of the month; towards the end it was about 96 degrees. Sensible temperature

very sultry, owing to heat radiated from black roofs composed of uneven tiles. Uneven surfaces radiate more fiercely than even ones, as experiment shows. 26th. Air so cool at 4 A.M., that covering on the bed was sought for; the column at 82 degrees. 27th. On my return from a walk at sunset, found thermometer at 83 degrees, which is unusual.

BAROMETER.—1st, 29.55, ascending gradually till 9th, 29.76, descending till 12th, 29.73, stationary till 18th, 29.65, stationary till 28th, 29.49. Stationary.

HYGROMETRIC STATE.—Excessively dry. This dryness is not affected by a shower. Towels soddened in water are dried stiff in an hour or two.

WIND.—South-east. Often calm till near mid-day, when a brisk and refreshing breeze springs up, rendered fitful at our residence by the heat of buildings, which seems to stop its course. It is a common remark here that along the river Min, from the sea to Foo-chow, the wind comes up and goes down with the tide. The channel inclines to east and west. The water of the sea is colder than the water that descends from the heated country.

SKY, CLOUDS, MISTS.—Sky in fine weather occasionally invested with a haze of a somewhat sombre hue, or sprinkled over with a few fleecy clouds, or “teih ne,” of the Chinese. 22d. Haze moderated the sensible temperature and made it feel cool, though the thermometer stood at 96 degrees.

RAIN AND ELECTRIC PHENOMENA.—17th. In the evening a thunder shower travelled from west to east over Foo-chow, that is from one high point of the hills to another. Rained hard for a short time. 20th. After mid-day the thunder was heard pealing in the distance, the lightning glared, the wind rose, and the rain began to descend, but not in copious effusion. One of the loudest and smartest claps, within my recollection, took place, apparently just over our head; it resembled a large piece of ordnance. A cool breeze followed, and the evening was pleasant. 21st. In the evening, towards the N. W., the clouds, broad and massy, seemed like a battery emitting sparks and flashes, which from time to time exploded in serpentine lines and cornscations, while a continuous blaze was spread over the face of the vapour, forming a splendid aurelia, in which these phenomena continued to play for more than half an hour. 24th. A shower and thunder at day-fall. 27th. At 2 P.M. clouds rising from the west promise a shower. A squall follows, but of short duration, as the clouds shift rapidly. 28th. About 3 P.M. sky overcast, thunder rumbling in the distance. 29th. Sky clouded; a few drops of rain patter upon the tiles.

OBSERVATIONS ON HUSBANDRY.—In the

early part of the month the unreaped crops of rice are shorn down. The sickle is short, of small curvature, and compared with that of the English, very ineffectual. It is wielded by females as well as males. The setting out of the second crop of rice continues till nearly the close of the month. The blades and precocious ears are cut off and thrown down by the roots. 27th. Saw a peasant turning in the stubble with the “Louk touk,” or “kah loo,” a roller armed with rows of wooden teeth or pins, like the barrel of a hand organ. Men employed in sowing “Yay Moy,” or oily grain among tobacco and other spots, in a trench opened by a hoe or mattock. Boatmen hard by employed in storing and loading salt for the interior.

FRUITS, FLOWERS, AND VEGETABLES IN SEASON.—The assortment of fruit small. The plums of a rich purple and of a most grateful taste, are now in season, and cover the stalls and benches in profusion. Pines are brought hither chiefly it is said from Formosa. Pomegranates serve now to deck the table, but are of small size and little flavour. The *Jasminum grandiflorum*, or “Mole wah,” is now in its prime, cultivated in ridges for a garniture of tables. The vegetable most abundant now is the *Convolvulus reptans*, or “Oungtsy” of the natives. It is grown, not in water as at Canton, but on beds, where it yields many a snow-white blossom. It is very wholesome, and relished by all. The large “Tung-kwa,” or vegetable marrow, is abundant and very large, sometimes a foot and a half in length and about a third in diameter. The *Luffa acutangula* is now in prime. These are grown over leeks on a kind of roofing. Leeks shaded by the gourds are plentiful, being cut three or four times a year.

ANIMAL KINGDOM.—The voice of the “Hwang pong chow,” or red-winged pie, is heard among the fir-trees, and is so peculiar, that it is difficult to find a similitude. It is something compounded of a sob, a howl, and the dying beats of a bell. When displeased it utters a peculiar clucking mixed with the scolding of a cat. A large forked-tailed flycatcher, with his mate, perches on the topmost shoots of a tall tree, and from time to time soars aloft in quest of insects, and then with a sweep returns back to his mate. A hawk, which seems to be identical with the kestrel, utters a note which resembles that of the wry-neck, while it darts from the tall-trees to tease the fishing hawk, whose cry may always be heard, but mostly in the morning. Dragonflies of red, green, and blue tints, skim over pools of water, or flutter along the fences. A member of the day-fly, or *Hemerobius* family, with long antennae, is seen among the dragonflies, which it much resembles in external

appearance: it is new to me. The field spider (Tagenaira) spreads its net, an inverted cone, among the long grass everywhere.

EVENTS AND GENERAL REMARKS.—1st. Arrive at Foo-chow. Take up our quarters at the office of a salt monopolist on left bank of river. 3d. Meet the Superintendent of Trade. 8th. Remove to salt monopolist's residence on left bank above the bridge. 13th. Met the Governor-General. Saw fishing cormorants on rafts for first time.

AUGUST.

THERMOMETER.—1st, max. 91 deg. 2d, 91; 3d, 93; 4th, 93; 5th, 93; 6th, 85; 7th, 92; 8th, 92; 9th, 92; 10th, 89. Min. observed this night, 83 deg. 11th, 6 A.M. 82; 10th, A.M. 82; 2½ P.M. 80; 4 P.M. 80; 12th, 7 A.M. 80; 3½ P.M. 89; 13th, sunrise, 82; P.M. 90; 14th, sunrise, 82½; 16th, morn. 94; 17th, 94; 18th, 92; 19th, 92; 20th, 94; 21st, A.M. 89; 3 P.M. 85; 22d, A.M. 89; 23d, A.M. 82, stationary; 24th, A.M. 81; 25th, sunrise, 82; P.M. 88; 26th, sunrise, 82; 27th, noon, 90; noon, 87; 28th, P.M. 89; 30th, P.M. 90; 31st, P.M. 90.

BAROMETER.—1st, 29.49; 2d, 29.43; 3d, 29.43; 4th, 29.56; 5th, 29.66; 6th, 29.60; 7th, 29.60; 8th, 29.60; 9th, 29.68; 10th, 29.56; 11th, 6 A.M. 29.36; 10 A.M. 29.38; 2½ P.M. 29.38; 4 P.M. 29.43. Fall in Barom. followed a gale. 12th, 7 A.M. 29.61; 3½ P.M. 29.67; 13th, at sunrise, 29.67; 14th, sunrise, 29.74; 16th, morn. 29.69; 17th, ditto, 29.73; 18th, 29.69; 19th, ditto, 29.66; 20th, ditto, 29.62; 21st, A.M. 29.56; 3 P.M. 29.51; 22d, A.M. 29.45; 23d, A.M. 29.41; fell 3-100; 24th, A.M. 29.65; 25th, sunr. 29.72; 26th, 29.72; 27th, stationary to sunr. end of month.

HYGROMETRIC STATE.—1st, very dry; 5th, less dry; 7th, very dry; 11th, no apparent change in dryness; 16th, very dry; draught of the air scalds the face.

WIND.—1st, S. East; 10th, morning, S. East; evening, N. East; 11th, North; 22d, N. East; 23d, S., gusty; 24th, calm. At sunset N. East; 25th, S. East; S. East; S. East.

SKY, CLOUDS, MISTS, RAIN AND ELECTRIC PHENOMENA.—1st, Cumuli or fleecy clouds, with mists, which are clouds couching over the city. 4th, Rain fell in the night; 5th, Nimbose clouds; 6th, Showery in the afternoon; 7th, Cloudy; 8th, Morning bright; 9th, In the morning, rainbow over the city; day showery. 10th, Morning bright; afternoon cloudy. In an evening walk noticed large massive clouds, brooding over the valley, on this side the southern range of hills. On a sudden the wind, then southerly, veered to the north, and huge volumes of sable coloured vapour made their appearance over the city. A stagnation ensued, which lasted a few minutes, as if the atmospheric columns were

vibrating between a double and opposite course; a shower followed, but did not last long. In the night the rain fell in torrents and the wind blew tempestuously. The air was chill, but had not a portable thermometer to ascertain the temperature, which I regret. 11th, Sky, at sunrise, hazy and nimbose; black clouds skirting the hills behind the city. Wind strong and gusty. At 8 o'clock, A.M., rain had ceased. 10, A.M., rain, with a mist over the city. P.M., rain, with blinks and gleams of sunshine. Air cold to sense; wind hushed. Thunder and lightning in the night; chilly. 12th, Haze; detached fragments and sheets of cloud invest the sky. The largest and most sombre masses overhang the city, the focus and centre, around which atmospheric charges seem to play. 13th, Morning, grey dew on the grass. Calm and massy clouds in the evening. Much foam floating down the river. 16th, Clouds threaten rain, being of a nimbose character. 17th, Sultry in the morning, succeeded by a haze; clear at noon. 19th, Day fine and sultry. 20th, P.M., a shower. Clouds red at sunset; evening fine. 21st, Morning grey and sultry. At noon a shower, during which the barometer and thermometer both fell, which is unusual, as showers are so local, that they effect not these columns, in general, at this place. Evening showery. 22d, Day ushered in by a drizzling shower; afterwards intermitting between sunshine and a nimbose haze. Evening showery. 23d, Much rain had fallen in the night. Day throughout rainy. 24th, Had rained steadily in a calm night. The nimbose sheet parting a little in the south, sun broke through between seven and eight. Afternoon fine; heavy shower at sunset, and shift of wind. 25th, Fine; breeze refreshing. 26th, Morning fine; breeze fresh; shower in the evening. 27th, Morning showery. Rainbows, primary and secondary, bestriding the city. A supernumerary arch of green. 28th, Morning hazy; day hot and clear.

OBSERVATIONS OF HUSBANDRY AND GARDENING.—Peasants employed about the rice crop; the women on hoeing, the men in replanting where it has failed, thinning where the tufts are too dense, in stirring the soil around the root, and wrapping it up in decayed straw: the last is very laborious, as the workman kneels the while in the mud and water. The water-wheel, for irrigation, complains of an ungreased axle, in sounds that fill every corner of the valley, towards the middle of the month. Tobacco cut, and dried by interlacing the leaves in hurdles to keep them flat. The stump of the plant is left to throw out a few shoots. The oily grain in flower. It needs the hoe but little, as few weeds venture to spring up near it. The

sugar-cane in full luxuriance. The gourds and melons mentioned in the foregoing month, continue with the *Momordica charantia*.

FRUITS AND FLOWERS IN SEASON.—The after part of the month. Longans, much esteemed and plentiful, now begin to show themselves at table. Plums continue, but disappear towards the close of the month. A small green fruit, which the natives call Yew kang, is seen on stalls, (from Amoy). The Indian shot, very common here, is now in flower, as is also a species of *mirabilis*. Pears may be seen upon the trees in here and there an enclosure, but they are small, hard and tasteless. A large kind serves to adorn the greengrocer's board, which, it is said, are from the South, but they are scarcely to be eaten by a foreigner. Towards the end of the month guavas are gathered green and ripen on the benches.

ANIMAL KINGDOM.—The middle of the month. A black silky ant, with its thorax armed with spines, and the free midriff joint, with three prongs, like a Chinese halberd, is seen coursing over the shrubs and bushes in search of glandular juices, or the cutaneous excretion of the coccus. Its nest, made of paper, compounded of mashed fibre, saliva and leaves and sticks, hangs on trees and fences. The white crane, very common, with several of a veined plumage. The former amuses itself by catching the flies, which settle upon the cows while at pasture.

EVENTS AND GENERAL REMARKS.—Early in the month. During a storm, a house, ignited by the falling down of a lantern, spread the flames till thirty shared the same fate. The buildings being of wood, no small effort on the part of the military, who comprise a fire-brigade, to extinguish the flames, was required. Fires are unfrequent; a remarkable fact, as the houses are chiefly timber, the air dry, and the people crowded. Visited the highest hill within the basin-like valley of Foo-chow, and observed that the rock is porphyritic, chiefly of felspar, which, disintegrating, crumbles into a fine red clay. The "Gazelle," sent by Capt. Gribble, to inquire of our welfare, arrives. She had experienced very heavy weather, and witnessed great fluctuations in the barometer during the gale. "Gazelle" starts. The Chinese spinsters pray "New Lang" to bestow on them ingenuity, and in order to know whether the divinity listens to their vows, each strives to thread a needle behind her head. If she chance to hit the eye of the needle, her parents and friends congratulate her; if she misses, they think the opening talents of the young maid will fall short of their wishes. In Se-chuen young ladies put a spider into a box and hold it while they recite a prayer to New Lang. If the

spider has in the meantime begun to spin a web, they deem it a good omen. Music and processions at night. The "Petrel," belonging to Messrs. Dent and Co., anchors at the Lo Sing Pagoda. Mr. Brain arrives at Foo-chow, with a view of making inquiries as to the prospects of trade.

SEPTEMBER.

THERMOMETER.—1st, 82—90 deg. 2d, 82—90; 3d, 83—89; 4th, 86—88; 5th, 84—88; 6th, 84—88; 7th, 80—81; 8th, 78, not observed; 9th, 78—89; 10th, not at home; 11th, 78; 12th, 74—78; 13th, not at home; 14th, 74—80; 15th, 75—80; 16th, 75—85; 17th, 75—83, to 20th, 21st, 75—82; 22d, not observed; 23d, 75—89; 24th, 75—88; to 27th, 28th, 84—88; 29th, 84—88; 30th, 80—84.

BAROMETER.—1st, 29.72 deg.; 2d, 29.72; 3d, 29.63; 4th, 29.60; 5th, 29.66; 6th, 29.68; 7th, 29.70; 8th, 29.74; 9th, 29.78; 10th, not at home; 11th, 29.78; 12th, 29.78; 13th, not at home; 14th, 29.78; 15th, 29.78; 16th, 29.76; 17th to 20th, 29.76; 21st, 29.78; 22d, not observed; 23d, 29.78; 24th, to 27th, 29.78; 28th, 29.79; 29th, 29.79; 30th, 29.79.

HYGROMETRIC STATE.—Dry all through the month.

WIND.—1st, N. East; 4th, A calm, S. East; 5th, S. East; 7th, Newly calm, S. East; 10th, N. East; 11th, N. and N. East; 12th, N. East; 16th, S. East; 17th, N. East.

SKY, CLOUDS, RAIN, MISTS, AND ELECTRIC PHENOMENA.—1st, Morning and day clear; 2d, Morning clear, in the evening clouds rose in the North and followed each other in quick succession. Wind at that time easterly. A gentleman remarked that it was going to blow from the South again. 3d, A fresh breeze has been blowing all night from the South, which accounts for the Therm. being at sunrise 2 deg. above its usual average, 82. The sky bore a nimbose aspect all day. Wind gusty in the evening. The night cloudy, but not so as to obscure the moon. 4th, Sun breaking from between the clouds in the morning. In the afternoon, heavy rain with thunder and lightning. 5th, Morning, clouds dispersing and the sun shining; in the afternoon, a shower; evening, fine. 6th, Morning, fine, at first clouded agreeably, as clouds by their interposition screen the earth. 7th, Day cloudy. Is the unusual coolness of this day owing to the clouds? Night cool, sky overcast with dark motionless clouds. 8th, Day cloudy. This fall in the Therm. and rise in the Barom. betokens a northerly wind. Moisture fell in the night. 9th, Day throughout with sky overcast, but no rain fell. 10th, Rainy and cold on the ridge of the hills. 11th, No rain at Foo-chow. Sky cloudy. The clouds

of the cold-region wind, that is, strato-eumuli loose above, even below, menace rain without falling into a rain cloud. 12th, Sky overcast. The foam and colour of the water indicate that rain has fallen upon the basin of the river Min, *i. e.* on the hills to the westward. 13th, Rain, clouds, and piping winds at the Monastery. 14th, Day, a mixture of fine and cloudy. 15th, Morn overcast. Breeze fresh and cool. 16th, Morn, sky covered with hard-seeming clouds, clear as the day sprung up. 17th to 20th, Sky clear, with occasional variations of that dark-stoned and apparently solid mantle, which is peculiar to the N. wind in northern latitudes, as it is to the S. in southern latitudes. 21st, Morn, light rain accompanied a cloudy dawn, or, the cloud was so low as to couch upon the surface of the earth. Day hot and misty. 22d, Day, very hot and misty. 23d, Day, very hot and sultry. 24th to 27th, Weather fine and cheerly. The North-east Monsoon fairly set in. 28th, Day, fine and sultry. 29th, Day, fine and sultry. 30th, Day, fine.

OBSERVATIONS OF HUSBANDRY AND GARDENING.—In this month the beds of the *Convolvulus reptans*, or Oung-tsy of this place, are cleared and the soil turned up for planting the "pak tsae," or Chinese turnip. These are first sown and then transplanted, as are all vegetables belonging to the Cruciferous family. The stakes and roofings as substitutes for trellis work which supported the different kinds of gourds and melons are cleared away, and the leeks, which they shaded, begin to lose their freshness and beauty. The fields of rice, that formed such an object of solicitude in the preceding months, are now comparatively quiet, rejoicing in one continuity of the richest green. Still the farmers are not asleep: men and women are seen in the fields searching for weeds that may spring up unawares. The hoeing of sweet potatoes and the training of their stems form a part of the husbandman's business now. To water the roots and stir the earth has an obvious tendency to nurse the tubers, while the care bestowed on the tops is with a reference to their usefulness in affording provender for pigs. The *Eleocharis tuberosa* blossoms in this month. Its jointed rush-like stem makes it appear unique amongst plantations of rice. White awned and red awned rice in flower; these are planted later than the first crop of rice, and are later in coming to the sickle. They are called "sook" by the natives; the latter crop just beginning to open. This is called "wang ching me;" or, otherwise, "faw," the Foo-chow pronunciation of the Mandarin "taou." Job's tears, grown here for the sake of the involucres, or enamelled sheath of the flower, fringe some of the rice plots very charmingly, as it is at once in

fruit and flower. The leaves are softly turned and luxuriant; the clusters or panicles nodding their graceful forms. These beads of nature's own turning are in request for rosaries.

FRUITS AND FLOWERS IN SEASON.—The longans are gathered in this month, and are met with in profusion every where. The zeal and joy that accompanied the plucking of this fruit remind one of greater things; the autumn at home; and the grape gatherings in the East. A fortnight, or three weeks before they are plucked, lodges are built to guard them from thieves, props are placed under their boughs, and their trunks surrounded with a ruff of thorns. The guavas are gathered generally before they are ripe, for the sake of economy. When taken from the tree with a nice attention to their colour and form, they prove very acceptable, but if bought from the stall they are little esteemed. Various kinds of toad-stools are gathered among the fir-trees by the peasantry; their colour is yellow, with a mixture of red. They are dried before they are fit to eat. Leeks are very abundant. The pik-tsae is fit for the table, as is also the sweet potatoe. The po-tsy, or spinach, appears. The brinjal is grown here, but is not remarkable for size or goodness.

ANIMAL KINGDOM.—Magpies moult in the early part of this month, and are consequently seen moping in silence, or uttering a plaint or two as if heart-sick. In about a fortnight they overcome their indisposition, gain a new suit of feathers, and hold their noisy levees on the sides of the hills with great spirit and fire. The calls of the shrike, or butcher bird, are heard occasionally. Soon after sunrise he indulges the feathered tribes with a song, but he is so shy of letting his powers be known, that I am not aware any naturalist, except the writer, ever noticed it. The white herons assemble and wheel round as if mustering their numbers for an æry jaunt, though it is not apparent that all leave for southern regions. The fishing hawks assemble at day-fall, and wheel round in a kind of social pastime, or a trial of their powers, as they soar to a great elevation. Swallows begin to meditate a migratory journey. In this month, the Cicadae, seated upon the fir-trees, make the groves and copses resound. As the old ones die, younger ones emerging from their humble condition in holes of the ground, leave their last garments behind, and after a few hours climb to the tops of the trees. Song of the throistle, "Osheput" of Canton, and "Ching chow" of this place, is heard at day-spring. The notes are mellow and heart-cheering.

EVENTS AND GENERAL REMARKS.—I am told that there is a current of old Spanish

dollars running from Chin-chew, or Cheunchow, at the rate of $1\frac{1}{2}$ lac per month; some hoards must have been ransacked to supply this stream. Mr. Braine starts for the Pagoda, to join the "Petrel." The fleet of junks, from Ningpo and other places on the coast, begin to diminish, as the shipmen are wishful to save some of the Monsoon. Started a fine hare amongst the fir-trees. Visit the Monastery of Koo-shan, seated in a romantic spot. (20) Public examination in the Four Books takes place to-day. The candidates assemble to write essays at night. Other classics on each alternate day till the 29th. Emperor's birth-day; but little stir about it in vicinity. "Proserpine" steamer arrives. "Proserpine" leaves to take her station at the mouth of the Min, to await the arrival of the "Castor," with His Excellency the Chief Superintendent.

OCTOBER.

THERMOMETER.—1st, 77 deg.; 4th, 84; 8th, 86; 10th, 80; 14th, 81; 15th, 81; 16th, 81; 17th, 80; 18th, 80; 19th, 84; 20th, 82; 21st, 78; 22d, sunrise, 71, 76; 23d, 82; 24th, 82; 25th, 64—72; 26th, 72; 27th, 70—71; 28th, 82; 29th, 83; 30th, 72—72; 31st 72—80.

BAROMETER.—1st, 29.35 deg.; 4th, 29.85; 8th, 29.60; 10th, 29.93; 14th, 29.87; 15th, 29.87; 16th, 29.83; 17th, 29.83; 18th, 29.81; 19th, 29.79; 20th, 29.83; 21st, 29.83; 22d, 29.83; 23d, 29.82; 24th, 29.84; 25th, 29.87; 26th, 29.87; 27th, 29.87; 28th, 29.84; 29th, 29.82; 30th, 29.96.

HYGROMETRIC STATE.—1st, Dry; 10th, Very dry; 13th, Dry; 17th, Very dry; 26th, Less dry.

WIND.—1st, N. East; 20th, Noon, N. East, and East; 21st, N. East; 31st, S. East.

SKY, CLOUDS, MISTS, RAIN AND ELECTRIC PHENOMENA.—1st, Cloudy with light showers; 3d, Weather fine; wind strong, which at times brought clouds from the North; 4th, Day fine; 6th, Weather bright and fair at the entrance of the river, where the Proserpine is lying; 8th, Sky overcast during the day; 10th, City enveloped in mist all day; 15th, Sky overcast at various times during the day; 14th, 15th, and 16th, Days cloudy; 17th, The sky clearer to-day. The surrounding hills seem to cause that prevalence of haze so common here in this month; 18th, Sky during the day, alternating between fine and cloudy; 19th, Day fine; 20th, Dark clouds with their edges coloured red, usher in the sunrise. Sky clear and cool throughout the day. Strong southerly breezes at noon; 22d, 4 A.M., Showery. The weather feels cold to sense. Cloudy. 23d, Dew on the grass. Day fine, clear, and warm. 24th, Dew on the grass at sunrise. Mid-day fine. P.M. Sky overcast

with a cloud that reached to the ground. Night clear and cold. Wind rising: the coughing vapour merely the forerunner of a colder North breeze. 25th, Day cloudy; evening sombre, followed by a cloudy night; 26th, Day fine; cloudy at night; about midnight, rain; 27th, Air less chilly in the morning: night very mild, fine. 28th, Day fine; mist over the city. Evening, clouds threatened rain, but it was only the precursor of heat. 29th, A fog in the morning. Fine and sultry, mid-day. Showery at day-fall. 30th, Day cold and overcast. Mist heavy and cheerless over the city. 31st, A sense of warmth in the atmosphere, and the previous night was mild. Noon and afternoon clear and cheerly.

OBSERVATIONS ON HUSBANDRY AND GARDENING.—The fields that in the preceding month displayed such a fine mantle of green, are now beginning to wear a yellow tint. The echoing water-wheel is hushed, and the husbandman's cares are directed to the kitchen garden. The seeds of spinach, celery, pih-tsae, or white turnip, and other culinary vegetables, are sown in separate beds, to be transplanted as soon as they have acquired about two inches in length. Beds of onions exhibit great luxuriance; celery has acquired a few inches in length; and garlies are seen sprouting through the straw that covers their bed. The sweet potatoes cut into small shavings, are spread over the area of tombs to dry in the sun, and preserved as a winter stock. In this form they are grateful to taste, and convenient for a voyage, as sea-store. Setting out mustard-plants, or ky-tsy, in holes filled with ashes. This pot-herb is distinguished for its broad leaf veined with red. Planting garlic in holes. A segment of the root is put into each hole. The bed is forthwith covered with straw. Pulling up the leeks, or kew-tsy, and tearing away a part of the roots. Thus treated, the plants are set again. After this operation the beds soon exhibit a very elegant appearance, for the plants almost instantaneously assume the freshest green, while the interstices are ornamented with prism-like ridges of soil planted with the white cabbage, or pih-tsae, spinach, or mustard. To increase the effect, the bed is often fringed with lettuce plants. System is with the gardener sufficiently pliant and diversified, so that while beauty and economy are aimed at, ample room is left for taste and individual wants.

FRUITS AND FLOWERS IN SEASON.—The "Diospyros kaki," a tree belonging to the Ebony family, furnishes now its well-tasted and slightly acid fruit for the dessert, and the lighter meals of the better sort of Chinese. It is called by the natives, Te. Kaki is the Japanese term for it. Oranges in a green state begin to make their appearance at table;

but the trees do not thrive much in the neighbourhood, as the bark is apt to crack and secrete a gummy exudation. The pumeloes are ripe, but small, unenticing, and not well flavoured. They are called "Paw" here: the rind of the stunted sort is made into boxes. The sweet potato is now in great abundance. It has two varieties—the pale and red: the latter is preferred. Both are pleasant, highly nutritious, and easily digestible. They are steamed, and sold to workmen and passengers at an early hour. Onions are now plentiful and of easy purchase. The bulbs are small, and, not being intended for a winter stock, no pains are taken to make them apple. The supply of fresh onions lasts through the winter; crop succeeding crop, till the spring. The jasmine still continues to flower, but the leaves lose their freshness; and the flowers, some of their scent. The chrysanthemum is seen in pots, but seldom in flower-beds, since the non-residence of the gentry checks the love of display. The *Pyrethrum Indicum*, or guey-tsy of the natives, is now fit for cutting, when the leaves appear in tufts, and the stems not yet developed. A cabbage called "Kylan-tsy," with blue bloom and lyrate leaf, is fit for table. It has little of the cabbage flavour when dressed.

ANIMAL KINGDOM.—The yellow-headed starling, or "king-chow," with its gay piebald plumage, now perches on trees hard by dwellings, and cheers them with its song. Spiders of the *Clubiona* and *Attus* kind, now retire to the habitations which they form by drawing two leaves together, and lining them with a dense web. When the tree is of a deciduous kind, they anticipate the fall of the leaf by binding its footstalk to the stem. About the middle of the month the wagtail arrives, and utters its wintry note by the side of the pool or river, on the roofs of buildings and objects in the neighbourhood of man. Butterflies (*papilio*) distinguished for their size and beauty, are now less frequent, and the various pretty moths, which spring from the grass at every step, have retired to their hiding-places, except such as belong to the silk-worm kind, which sleep on the surface of leaves during the day, and enjoy their pastime at night. A dark coloured sesia may be seen in copulation on stems of grass and the stalks of plants. That curious sort of sand-wasp (*Ammophilus*) is seen occasionally asleep, hanging merely by its jaw. The adductor muscles of the mandibles are short, and draw them towards each other independently of the will of the insect. The white tippot crow, noisy at all times, is now unusually vociferous. To native dames the magpie is always welcome, because he laughs; the crow otherwise, because he reiterates, "I want, I want," (*Caw, Caw.*)

EVENTS AND GENERAL REMARKS.—An officer arrives from the "Proserpine," to report an assault made by the natives near the mouth of the river (Woo ko mun how) upon some officers belonging to the steamer, at 2 P.M. At 2 A.M. start for the steamer in company with deputies from the authorities to inquire into the causes of this assault. Met the Am. schooner "Petrel," and obtained a pilot for her at the station. Return to Foo-chow. Start for the "Proserpine" in company with a deputy from the Fan-tae, and return to Foo-chow on the evening of the 7th. His Excellency arrives at Foo-chow. Takes a view of city from the Pagoda in the morning. In the afternoon receives a visit from the Chinese authorities. Starts in the "Proserpine."

There is scarcely any thing at the present moment more interesting to the horticultural world than genuine information of this kind, and the fact of its coming on the occasion, from such a source, renders it doubly so.



THE HYACINTH.

THE Hyacinth is grown so largely in Holland, that it has never been taken up in this country as a thing worth raising from seed, or a subject worth cultivating to any extent as a nursery plant. The question all men ask themselves, is, whether a thing will pay to grow; and, so far as the bulbous rooted plants are concerned, very few are really taken up with spirit, in consequence of the Dutch people growing them so well, and selling them so cheap. It has been too generally fancied that there is something peculiar in the soil of Holland, which enables the cultivators to do that which cannot be done in England. It is not

so; there may be advantages, but they can be supplied in England cheaply and artificially; and the Hyacinth has been raised in England from seed, and grown in England from offsets, as fine as ever they have been produced in Holland. The notion that they degenerated in England, has arisen from the indisputable fact, that the great majority of the noble bulbs which are imported, are good for little or nothing after they have bloomed one year. But the Hyacinth is the same in Holland; they improve from the smallest offsets, till they have arrived at the perfection of growth, and throw the handsomest bloom they are capable of producing, and, after this, they degenerate, and split into offsets. But the year they have arrived at the perfection of growth, and are taken up with the moral certainty that they will the next season produce the best flower, is the period chosen to send them to England; so that, with very few exceptions, none would offer the least chance of continuing fine for another season, even if grown where they were raised. But, to raise the Hyacinths from offsets, they require to be planted in rich sandy soil; and, when they come large enough to throw a bloom, all the buds but the top one must be picked off the spike, season after season, until the bulb is large enough to promise a fine flower for the ensuing season; they will be found then as fine as any of the Dutch roots, and produce as much money; but the operation is tedious, the English people do not lay themselves out for it, and the Dutch have all the trade to themselves. The most extraordinary quality of the Hyacinth bulb, when grown up to perfection, is its certainty of blooming, in spite of the worst possible treatment: from the cellar to the garret, in the worst and most confined places in London, the Hyacinth will bloom. It only requires moisture enough, and a little light; heat, cold, wind, colour, light, are only things which may make them bloom earlier or later, finer or worse, but bloom they will somehow, and at least prettily. It is, without any exception, the richest of the hardy bulbs imported in any quantity, and there is hardly an excuse for being without it in any respectable house.

HORTUS SICCUS.

THE dead specimens of plants form one of the most beautiful of all collections, and next to the living plants, they are the most interesting. There is no difficulty in either collecting or preserving them, and especially if they are dried without the air getting to them, and they are in good order. All specimens should be gathered in the most perfect state—notwithstanding the dogmas to the contrary—that is, when they are in flower, if the flower is

handsomest, in bud when the buds are handsomest, and in fruit when the fruit is handsomest; and, according as buds, flowers, or fruit are large, so the difficulty of preserving in good form is felt. The first thing to procure is a quantity of the paper made on purpose for drying plants, a kind of thick soft paper, like blotting-paper, but as thick as the coarse brown paper. It is between these that specimens are to be dried: plants which are not very full of juices will require nothing but to be laid in proper positions, for the specimens should be handsomely formed, and give a good notion of the plant itself. When the roots can be preserved with them, that is to say, the plants preserved whole, they are considered superior to merely cut specimens. They should be laid on a table on a sheet, or perhaps two or three sheets, according to the nature of the plant. The specimen should then be placed in the best position for show, and covered with one, two, or three other sheets. Upon this a weight should be laid, and the best that can be found is sand. This is placed in bags of various size, only half-filled, so that by placing one of these bags of proper size over the plant, the sand presses down between the branches, and keeps the absorbent paper close to its work; whereas a flat board, such as most writers recommend, presses hard upon the prominent parts, and the paper touches none other, the effect of which is, that the prominent parts get pressed into unnatural form, whilst those which are thinner shrivel because they are not pressed, and do not dry so rapidly. For every succulent plant the paper should be changed once a day, until a proper degree of dryness has been attained. The papers taken from plants should be dried by the fire or in the sun, because they have to absorb the juices of the plant, and if they were used damp they would cause the specimens to mould and rot instead of drying them. Some specimens require the greatest care on account of the great size of their flowers, or buds, or seed-vessels, or fruit; and others, on account of the succulent nature of their leaves and stems. Take Roses, Magnolias, Dahlias, Brugmansias, Tomatoes, Cacti, Mesembryanthemums, &c., as examples. The pressure of loose sand in a half-filled bag will be of the highest consequence, for it presses on the paper between the buds, flowers, or succulent leaves, so as to absorb the moisture rapidly; and by frequent changes of the paper, some of the most juicy and unmanageable subjects by any other means will yield to the perseverance of the student. But young beginners should commence upon the most inviting and easily managed subjects, such as Heaths, a collection of which should be made in flower, and the names accurately placed to each. These only

require to be placed in the best position, covered with paper, and pressed gently with any flat weight, though it may be taken as a general rule, that there is no pressure better than that of sand-bags, because when bags are only half filled, the sand is as free to run into hollows as if it were out of the bag, and presses everything close to the under surface. Heaths, however, are so little trouble, that if the specimens were placed in a common book they would be safe, though, by absorbing the moisture in paper best adapted for it, you are more rapid in the operation, and retain more of the colour in the flowers, which considerably enhances the beauty of the specimens. When once you have dried and arranged your specimens, they should not be wantonly opened, because air is very destructive of colour, and therefore the less they are exposed the better. Very succulent subjects require the papers to be changed many times, but the damp ones, taken away one day, may be dried and used for the change the next; and if a specimen be not thoroughly dried before being put away, its rapid decay is a matter of certainty. There are some plants much more easily preserved than others, by reason of their resinous or gummy nature; but even these ought to be regularly treated, for there is a good deal of watery moisture that may be absorbed. The Coniferae generally are of this nature, and it is scarcely worth trying to save these with the cones on them, except in a very incipient state. The cones preserve, but, when ripe and taken off the branches, the specimens are better without them, and pack better. In all cases it is necessary that the specimens be thoroughly dried before putting away; and everything should have its name, and the locality from which it was taken, whether it be indigenous or not. No person ought to be without a Hortus Siccus.

DESCRIPTIVE CATALOGUE OF GARDEN PEAS, WITH THEIR VARIETIES, AND SYNONYMES.

THE Pea (*Pisum sativum*, Linnæus,) is found wild in the south of Europe, and some of the garden varieties have been in cultivation in this country for many centuries, although not extensively, as in the time of Queen Elizabeth they were imported from Holland, with other fine vegetables then in request.

Pisum maritimum, another species, is found wild on the sandy sea coast of various parts of England, especially in Norfolk and Suffolk; and the young pods are sometimes gathered and dressed as the garden varieties, although their flavour is bitter and disagreeable. However, as an ornamental plant, it has some claims

to be admitted to the garden, as it produces a profusion of pretty purple blossoms, well entitling it to such a distinction.

The varieties of Pea now in cultivation are very numerous, and additions are being continually made; but the following list contains all those which are believed to be really distinct. No attempt has been made to keep them strictly in classes, although the most of the common sorts, known by their white seeds, are ranged first, followed by the Marrows and Prussians; those of less common occurrence, as the Sugar and Grey Peas, being placed at the end. As selections of the best sorts will be given, little inconvenience will result from their not being more scientifically arranged.

Cormack's Prince Albert Pea was raised from their Early Kent Pea, and is in bearing from ten to fourteen days earlier than the Early Warwick, or almost any other sort. It is of rather dwarf growth, productive, and hardy.

Waite's Queen of Dwarfs Pea is a new variety, not much exceeding a foot in height, very prolific, and the peas very large. A most desirable sort.

Bishop's Dwarf Pea, of strong growth to the height of about two feet, with four or five peas in a pod. A moderate bearer, but later than several others.

The *Early Dwarf Pea* grows about eighteen inches high, of a deep green colour, with about five peas in a pod. A prolific pea, but rather later than the last.

Cormack's Early Kent Pea is of about the same height, and nearly as hardy, as the Prince Albert, but is about six or seven days later in coming into bearing, and is hardly so productive. Altogether a variety of considerable merit.

Girling's Dancroft Early Pea is said to be earlier than the Prince Albert, and is a pea of the same class as the Warwick, but larger, and distinct in its foliage. It is a good bearer, producing six or seven peas in a pod, and is highly spoken of.

Farne's first Early Pea grows about two feet high, and, sown at the same time as the Warwick, was fit for use ten days before that variety. A good deal grown in some districts.

Warner's Early Emperor Pea grows about two feet high, producing large pods, and is quite hardy.

The last three Peas are new varieties, and require further cultivation before their true merits will be fully known, but report speaks favourably hitherto.

Shilling's Grotto Pea is an excellent variety, growing about three feet high, and highly esteemed. Sown as an early spring crop, it comes into bearing in little more than ninety days.

The *Early Frame Pea* is known under many different names. Of rather slender growth to the height of four feet, with small pods, containing about six peas. Early, and very prolific.

The *Early Warwick Pea* is also a great favourite with most growers for the first and second crops, is about ten days later than the Prince Albert; hardy, and very prolific.

The *Early Charlton Pea* is another which is almost universally grown, and is of taller growth than any of the preceding, with large pods, containing six or seven peas. It is about a week later than the early frame, but lasts considerably longer in bearing.

The *Auvergne Pea* grows from five to six feet high, rather slender, and of a pale green colour. The pods are long, round, the extremity turning up at a sharp angle, and containing from nine to twelve peas. A most prolific sort, of excellent quality and appearance, coming into bearing a little after the last.

The *Tall Frame Pea*, near the last in stature, with about six peas in a pod. Bears well, about the same time as the Charlton.

The *Common Spanish Dwarf Pea* grows about two feet high, strong, and with pods containing four or five peas. Later than Bishop's Dwarf, and only a moderate bearer.

The *Large Spanish Dwarf Pea* grows strong, like the last, about three feet high, producing five or six peas in a pod. Moderate bearer.

Dwarf Brittany Pea grows only six or eight inches high, of a dark green colour, with small pods containing about five peas. A few days after the Early Dwarf, and is a good variety for late sowing, as it bears well.

The *Eastern Shore Pea* grows about five feet high, producing small pods, with about four or five peas in each. A very abundant bearer, following the Charlton.

The *Dwarf White Marrow Pea* grows very strong, to about three and a half feet high, producing broad pods, with six or seven peas in each. Quality good, but not a productive sort.

The *Tall White Marrow Pea* grows very strong, to the height of seven feet or more, producing large broad pods, with eight or nine peas in each. Of excellent quality, very prolific, and a good variety for summer and late crops.

The *New Green Marrow Pea* grows strongly to the height of four or more feet, producing broad green pods, with seven or eight peas in each. Of first-rate quality in every respect.

The *Milford Marrow Pea* is also a variety of great excellence, bearing a few days later than the last. About the largest pea in the pod of any grown.

The *Tall Green Marrow Pea* is of very strong growth to the height of seven or more feet, producing pods with eight or nine peas in each. A late variety, very prolific, and of excellent quality.

The *Branching Marrow Pea* grows about six feet high, very strong, producing large pods, containing eight or nine peas. Of good quality, and bearing till the frost kills it.

Lee's Dwarf Italian Marrow Pea, is quite a new variety, and is very highly approved of where known. It is of dwarf growth, but very strong, producing a great quantity of very large fine-flavoured peas. It is also rather earlier in coming into use than the other Marrow Peas.

Knight's Dwarf Marrow Pea grows rather more than three feet high, and produces great quantities of broad pods, with from five to six peas in each. A very favourite variety.

Knight's Tall Marrow Pea is of very tall strong growth, producing large pods, with from eight to nine peas in each. A most productive sort, and one of the very best for late crops.

The *Scimitar Pea* is of strong growth, reaching the height of five or more feet. The pods are large, and contain from eight to nine peas. Also excellent for late crops.

The *Egg*, or *Patagonian Pea*, grows strong, to the height of seven feet or upwards. A good deal like the Tall White Marrow, but the peas are much larger.

The *Waterloo Pea*, grows strong, to the height of six feet, and very much resembles the Tall Green Marrow.

The *Pearl*, or *Nonsuch Pea*, attains the height of about six feet, producing rather small peas, of good quality, but not in much profusion.

The *Crown Pea* grows strongly to the height of six feet, producing the pods in tufts at the ends of the shoots. Each pod contains about five or six peas, of good quality. A useful sort for summer use.

The *Tall Imperial Pea* grows to the height of seven feet, producing broad pods, with about six peas in each. A very productive summer pea.

The *Blue Prussian Pea* grows strongly, about four feet high, producing seven or eight peas in a pod. A very highly esteemed sort, and one of the best for summer use, and is perhaps the most prolific of all.

The *White Prussian Pea* grows strongly to the height of four feet, with long flattish pods, containing seven or eight large white peas. An excellent sort for general summer cultivation, being very prolific.

Groom's Superb Dwarf Blue Pea grows very robust for its height, which is about eighteen inches. Pods large, with from eight

to nine peas in each. Prolific, excellent, and a few days later than the Blue Prussian, of which it is apparently a dwarf variety. It is said to produce more on the same space of ground than any other dwarf variety.

Waite's Queen of Dwarfs Pea, one of the most singular in its habit of growth and great bearing qualities that we have. Before this pea came out, it was grown in the Royal Gardens, and the proper officer of the household, as well as the gardener, conveyed to the raiser Her Majesty's approval of the flavour.

In addition to the foregoing there is another class of peas, more cultivated on the continent than here. They are called Sugar Peas, and are used when quite young, without being shelled; for the pods being destitute of the tough internal coat which distinguishes all the others, the whole *legume* is cooked, like French Beans. The following varieties have been described:—

The *Large Crooked Sugar Pea* grows very strong, six feet or more high, with very large twisted pods, with about nine large peas in each. It is considered the best in its class, very prolific, and good.

Fishamend's Sugar Pea grows strongly to about eight feet high, with long much-curved pods, containing eight or nine peas, of a yellowish colour, with small purple spots. A good bearer, and next the last in quality.

Vilmorin's Sugar Pea is of slender growth, about six feet high, with round, straight pods, containing about seven or eight peas. A most abundant bearer, and good quality.

The *Early May Sugar Pea* grows about four feet high, with small round pods, containing about seven peas. The earliest of its class, of good quality, but tender, and only a moderate bearer.

The *Tamarind Pea* is of strong growth to about four feet, producing very long curved pods, with nine or ten peas in each. The latest in the class, excellent in quality, and very prolific.

The *Late Wyker Sugar Pea* grows very strong, to the height of six feet, with much-curved pods, each containing about seven peas. Of good quality, prolific, and very late.

The *Dwarf Sugar Pea* grows about three feet high, with long pods, and about seven peas in each. Of good quality, middling bearer, and late.

The *Dwarf Dutch Sugar Pea* is of slender growth, not exceeding three feet, with small crooked pods, and about five peas in each. Of good quality, middling bearer, coming in about a week after the last.

The *Red-flowered Sugar Pea* grows about six feet high, producing long straight pods, with about six peas in each. A good bearer, but must be used very young.

The *Purple-podded Grey Sugar Pea* is of strong habit, growing about seven feet high. The pods are of a deep purple colour, short, broad, and contain about six peas. A good bearer, but more an object of curiosity than use, as the peas are bitter when cooked.

The *Alberjas Sugar Pea* grows strongly, to the height of six feet, producing small straight pods, with about seven or eight peas in each. Very good and very prolific; and is distinguished from the rest of its class by sometimes having a thin internal skin. It was introduced from South America.

In addition to these, the following sorts are only fit for agricultural purposes, but are introduced here as tending to render the list more perfect. They may be distinguished from the garden varieties by their ripe seed being any colour but white, and by a bitterness in the young peas when cooked which unfits them for table.

The *Grey Rouncival Pea* is a very strong grower to the height of eight feet, producing broad pods, containing brown peas, spotted with yellow, and black-eyed. A good bearer.

The *Late Grey Pea* is of similar growth and stature with the last, producing broad pods, with seven or eight peas in each, which are large, black-eyed, and of a light brown colour.

The *Maple Grey Pea* grows strongly, about seven feet high, producing long, broad pods, with about eight rather small peas in each, of a light brown colour. A good bearer.

The *Spanish Marotta Pea* grows about six feet high, producing small pods, containing about seven small round peas each, of a yellow colour, with black eyes. A great bearer.

The *Bean Pea* grows very strong, to nearly nine feet high, producing long, broad pods, with nine or ten peas in each, of a yellowish-white colour, with black eyes. They have some resemblance when ripe to small horse-beans, whence the name. It is a great bearer.

The following list of synonyms is perhaps better introduced here than mixed up with the descriptions. It is not so full as it might be made, but as it contains many popular names, it will be useful in preventing the same variety being ordered under different names.

The *Early Frame Pea*, *syn.* Early Double Blossomed, Early Single Blossomed, Mason's Double Blossomed, Double Dwarf Frame, Single Frame, Early Dwarf Nimble, Early French, Dwarf Albany, Early Nicholas.

The *Early Charlton Pea*, *syn.* Golden Charlton, Hotspur, Golden Hotspur, Double Dwarf Hotspur, Nimble Tailor, Paddington.

The *Common Spanish Dwarf Pea*, *syn.* Knox's Dwarf, Dwarf Fan, Dwarf Bog.

The *Dwarf White Marrow Pea*, *syn.* Wabash, Glory of England.

The *Tall White Marrow Pea*, *syn.* Tall Carolina, White Rouncival, Large Imperial Marrow, and sometimes Knight's Tall Marrow, either by mistake or design.

The *New Green Marrow Pea*, *syn.* Dwarf Green Marrow, Royal Dwarf Marrow, Green Rouncival, Wellington, Holloway Marrowfat.

The *Tall Green Marrow Pea*, *syn.* Imperial Green, New Large Green.

Knight's Dwarf Marrow Pea, *syn.* Knight's New Dwarf. There can be little doubt but that many of the new marrow peas recently brought before the public are selected from this variety.

The *Scimitar Pea*, *syn.* Dwarf Imperial, Imperial, Blue Scimitar, Sabre, Sumatra, Green Nonpareil.

The *Waterloo Pea*, *syn.* Nonpareil.

The *Crown Pea*, *syn.* American Crown, Rose or Crown.

The *Tall Imperial Pea*, *syn.* Tall Prussian, Spanish Patriot, Blue Union.

The *Blue Prussian Pea*, *syn.* Royal Prussian Blue, Prussian Prolific, Green Prussian, Early Dutch Green.

The *White Prussian Pea*, *syn.* Prolific, Poor Man's Profit, New Dwarf Norman, Stowe, Royal Prolific, Royal Dwarf.

The *Large Crooked Sugar Pea*, *syn.* New Pea, Early Spanish, Broadsword.

The *Early May Sugar Pea*, *syn.* Early Sugar, Dwarf Dutch Sugar, Early Dutch.

The following list contains a quantity of sorts chiefly brought out within the last two or three years, the qualities of which require to be proved by more extended cultivation:—

The *Early Racehorse Pea* grows to the height of three feet, but is not much esteemed.

Thompson's Early Dwarf Pea.

Fairbeard's Early Surprise Pea is a blue marrow variety, growing three or four feet high, said to bear abundantly, and to come in with the Early Frame.

Brownlee's Ne Plus Ultra Pea is a tall marrow sort, said to be an abundant bearer, and of excellent quality. It is said to continue in bearing for a long time, and is therefore most likely a variety of Knight's Tall Marrow.

The *Woodford Marrow Pea* is of moderate growth, flowering in tufts, like the Crown Pea, producing large pods. Much esteemed by some.

Improved Green Marrow Pea grows to the height of four feet, and is probably saved from the Dwarf Green Marrow.

Royal Green Marrow Pea is recommended as a second early sort, and is most likely of similar parentage with the last.

The *Matchless Marrow Pea.*

Lynn's Wrinkled Marrow Pea. Both these

varieties are recommended, the last bearing in about one hundred and twenty days.

The *American Marrow Pea* is a fine sort.

The *Large Mammoth Marrow Pea.*

The *Large New Mummy Marrow Pea.*

Hay's Mammoth Pea.

The *Victoria Marrow Pea* grows to the height of six feet, producing large pods.

The *Improved Giant Marrow Pea* grows to the height of seven feet.

Thompson's Dwarf Marrow Pea.

The *British Queen Marrow Pea.*

The *Prince of Wales Marrow Pea.*

Flack's Dwarf Blue Victory Pea grows about two feet high.

The *American Dwarf Pea* grows three or four feet high.

Bedman's Blue Imperial Pea is stated to be a good variety, producing its crop in about thirteen weeks.

Dancer's Monastery Pea is stated to be a fine large pea, useful for middle crops.

The *Dwarf Skinless Pea* is no doubt from one of the Dwarf Sugar Peas, if not identical with one of them.

Sutton's Superb Pea, and *Green's Superb Pea*, are two varieties strongly recommended.

Webb's King of Peas is said to be a hybrid raised at Geneva, between the Scimitar and Knight's Marrowfat, and to combine the good qualities of both.

Colonel Sheddon's Pea.—This is a very strong growing variety, attaining a height of from twelve to eighteen feet, and producing pods of very large peas; but, from its coarseness and somewhat bitter flavour, it will hardly be grown for culinary purposes, and its size is also likely to exclude it from the farm.

The following may be considered as the best varieties, and all that are necessary for any one establishment.

FOR EARLY CROPS.

Cormack's Prince Albert, Early Frame, Early Warwick, Auvergne, Early Charlton, Warner's Early Emperor.

FOR SUMMER CROPS.

Blue and White Prussian, Grooin's Superb Dwarf Blue, and Waite's Queen of Dwarfs.

FOR LATE CROPS.

The New Green Marrow, Milford Marrow, Scimitar, Knight's Dwarf Marrow, Knight's Tall Marrow, Tall Green Marrow.

SUGAR PEAS.

The most worthy of cultivation are the Large Crooked, Vilmorin's, and the Early May; but these varieties must not be sown before the beginning of March.

The following selection is recommended by a practical man of some experience, who finds

them quite sufficient for the supply of a large establishment. Cormack's Prince Albert, Warwick, Charlton, Scimitar, New Green Marrow, Milford Marrow, Knight's Tall Marrow, Groom's Superb Dwarf, Waite's Queen of Dwarfs, and Warner's Early Emperor.



PINGUICULA GRANDIFLORA.

(Large-flowered Butterwort.)

This is an interesting, a scarce, and a very pretty British plant, with broad fleshy leaves at the base of the flower-stalk. The flower is borne singly on a tall stem, which runs on one side the heart of the plant, and is a brightish purple. Its principal habitation is the bogs of Ireland. It is a dwarf, scaly-rooted plant; the foliage decays in winter, and appears again in spring: the flower-stem rises at the beginning of April, and it is in bloom in May. The only proper time to move the plant, is when there is nothing but the root to move; for, like other similar rooted plants, they suffer if removed while growing. They require a cool, moist situation, where they may remain undisturbed for two or three years at a time, and be only parted when they become too thick. They are increased by offsets.

NEW PLANTS FROM CHINA.

THE *Journal of the Horticultural Society* just published (January 1st), gives the following description of plants, &c., which have been received from their collector in China, Mr. Fortune, some of which may be considered an acquisition:—

ABELIA RUPESTRIS.—A small spreading bush, with deciduous, bright green foliage. The branches are very slender, covered with fine down, and deep reddish brown, when fully exposed to the sun. The leaves are opposite, ovate, distantly serrated, on very short stalks,

quite smooth except at the midrib on the underside, where they are closely covered with short hairs. The flowers are pure white, something like those from the honeysuckle, and come in pairs from the axils of leaves belonging to the short lateral branches. At the base of the ovary stand 3 very small bracts. The ovary itself is slender and downy; surmounted by a calyx of 5 obovate ciliated sepals, which are slightly stained rose-colour, and rather membranous. The corolla when expanded is half an inch long, funnel-shaped, downy, with a spreading border of 5 convex ovate blunt equal lobes, beyond whose tube extend 4 smooth filaments.

The plant is distinguishable from *Abelia chinensis* of Brown, by its want of involucre, smooth leaves, and not trichotomous flowers; and from the *Abelia serrata* of Zuccarini and Siebold, by its 5-leaved calyx. It has hitherto been treated as a greenhouse plant, but will probably prove hardy enough to stand out of doors in mild winters. The soil which appears most suitable is rough sandy loam, mixed with a little peat. Being of free growth, an ample supply of water is necessary during the summer season. In winter nothing different from the general treatment of greenhouse plants is required. It is propagated from cuttings of young wood, in the usual way. From its being sweet-scented, and the length of time it remains in flower, this will be of considerable importance as a greenhouse plant; and, should it prove hardy, it will doubtless be a good addition to the shrubbery in consequence of its flowering in autumn.—*Received from Mr. Fortune, June 20th, 1844, as a fine dwarf shrub, found amongst rocks on the Chamoo Hills.*

WEIGELA ROSEA.—"A shrub like a *Philadelphus*; old stems whitish, smooth; young ones green, slightly winged; wings alternating with the leaves and covered with hairs; leaves opposite, nearly sessile, elliptical, $1\frac{1}{2}$ inch wide, 3 inches long, serrated above, nearly smooth below, on the midrib and veins hairy; flowers axillary and terminal, 3 or 4 springing from each axil or end of the shoot, rose-colour; peduncles short with green short thread-like bracts at the base; calyx cleft into 5 unequal segments, 3 above and 2 below, 2-lipped, smooth, light green; corolla monopetalous, tubular; mouth reflexed and cleft into 5 equal segments, smooth; stamens 5, shorter than corolla, and inserted or growing to its sides; smooth above, but hairy from the point of union to the base of the corolla; style 1; stigma capitate, a little longer than the stamens; germen inferior, rather more than an inch long, nearly sessile, and having the appearance of part of the peduncle of the flower." Such is Mr. Fortune's description

of this most beautiful shrub, which has reached this country in safety, is apparently hardy, has already been distributed by the Society to a limited extent, and promises to take rank with the Chinese Azalea as an object of ornament. A drawing received from him represents it as forming loose clusters of from three to five flowers at the end of every little side branch, and his dried specimens show that the drawing is faithful in that respect. The flowers are rather more than an inch long, and are an inch and a half in diameter when expanded. In colour they are very like the well-known Chinese Crab (*Pyrus spectabilis*), pure white under, deep rose externally.

The genus *Weigela*, which originated with the Swedish traveller Thunberg, has been referred by modern botanists to *Diervilla*, and several species of it inhabiting Japan have been published by Messrs. Siebold and Zuccarini under that name. But although in many technical characters it approaches that genus, yet it is very different in habit; and since the seed-vessel is crustaceous, not membranous, and the seeds winged, not wingless, it seems expedient to preserve the original genus. The species now described is more like the *Calysphyrum floridum*, also a *Weigela*, and a most beautiful one, from the north of China, than any of the *Diervillas* of Siebold and Zuccarini, from all which it differs in its very large flowers, except their *D. grandiflora*, the leaves of which have very long stalks and the stamens hairy filaments. Hitherto this plant has been kept in a greenhouse, but it has so much the appearance of a hardy shrub that, especially considering its flowering in the north of China in the month of April, it will probably live in the open air.—*North of China, Mr. Fortune. Native name "Nouk-chok-whoa."*

PTEROSTIGMA GRANDIFLORUM. — In its wild state this plant does not appear to grow more than a foot or 18 inches high; but in gardens it has become more than 3 feet high, the consequence of which is, that its natural beauty has been greatly impaired. It is a perennial, covered all over with slender spreading hairs. The stems are round; the leaves are opposite, stalked, ovate, crenated, very much marked with sunken veins, and deep green. The flowers, which are nearly as large as those of a *Digitalis*, and of the deep colour of *Gloxinia violacea*, grow singly in the axils of the leaves, than which they are considerably shorter. Their calyx appears to consist of 7 narrow green leaves, imbricated at their base, but the number varies to 8; they form a complete broken whorl, and may be understood to consist in part of bracts which stand close to the true sepals, and become

blended with them; of these the 3 exterior are both broader and longer than the others. The corolla is tubular, 2-lipped, with the upper lip, broad, ovate, blunt, and notched, while the lower is composed of 3 smaller divisions placed nearly on the same plane; in this respect, however, the flower varies, some of the specimens having 4 lobes in the lower lip. The usual number of stamens is 4, of which 2 are perfect and next the upper lip, and two stunted, of the same length, but more slender, and belonging to the lower lip; when an additional lobe appears in the lower lip of the corolla it is accompanied by an additional sterile stamen. The perfect anthers are constructed in an unusual manner; at the end of the filament is a large globular green gland, which eventually shrinks up; upon this green gland are planted 2 lobes of unequal length, bursting longitudinally. The style and stigma too are of a singular form, the former gradually widening and flattening upwards till it ends in a thin broad plate, which curves forward and forms a stigma on its anterior edge. This species has been treated as a stove plant, but will probably prove hardy enough to stand in a greenhouse. It appears to grow freely in almost any sort of soil, especially sandy peat. In summer an ample supply of water is necessary, and shading in sunny weather. In consequence of its being subject to damp off in winter, it will require to be kept rather dry for a few weeks. It is very easily multiplied from cuttings in the usual way. Should this species flower abundantly, it will be a good addition to our stove plants.—*Bentham, Scroph. Ind. p. 21. Hooker and Arnott, Botany of Capt. Beechey's Voyage, p. 204, t. 45. Received from Mr. Fortune, July 30, 1843, from Hong Kong, as an herbaceous plant, with blue flowers, growing on hill sides and near streams.*

INDIGOFERA DECORA. — A dark-green handsome bush, with somewhat glaucous branches. The leaves are pinnate in from 2 to 5 pairs and an odd one, quite smooth on the upper side, but slightly covered on the under side with very fine hairs, attached by their middle; the leaflets are exactly ovate, with a short bristle at their end, between $1\frac{1}{2}$ and 2 inches long, of a very dark green colour; and to each pair there are two short bristle-like stipules. The flowers grow from the axils of the leaves in horizontal racemes much shorter than the leaves themselves; they are of a light rose colour and very handsome. The calyx is a flat membranous 5-toothed cup, with the two upper teeth very far apart. The standard of the corolla is oblong, nearly flat, very slightly keeled behind, nearly white, but pencilled with delicate crimson lines near the base; in length it is equal to the wings and

keel, and forms with them an angle of about 45° when expanded; the wings are narrowly lanceolate and ciliated, of a pale bright rose colour; the keel is rather paler, and bordered with a woolly or very downy upper edge. It is a greenhouse plant which will grow freely in almost any sort of soil, especially sandy peat. In summer an ample supply of water is required, and air at all times when the weather is favourable. To prevent the leaves from being scorched by the sun, it will be necessary to use shading. In winter, water should only be given when the soil becomes dry. It strikes freely from cuttings under ordinary treatment.

This is a good addition to our greenhouse plants.—*Received from Mr. Fortune, May 1, 1845.*

CALYSTEGIA PUBESCENS.—This curious plant approaches very nearly to the *C. sepium*, or larger bindweed, of our English hedges, from which it differs in having firmer and smaller leaves, much narrower bracts, and a fine pubescence spread over every part. It is the first plant of its order that has been mentioned as producing double flowers. They are about as large as those of a double *Anemone*, but the petals are arranged with the irregularity of the *Rose*; they are of a pale very delicate pink, and remain expanded for some days. The calyx is quite unchanged. The exterior petals are very much lacerated and irregular in form; those next the centre are narrow, drawn together into a kind of cone; the next central are completely concealed by those without them, and diminish till they are mere scales, analogous to those which may be found in the first buds which burst in the spring. Not a trace can be found of stamens or pistil.

It is probably quite hardy if planted in a dry situation. It requires a rich loamy soil, and is easily increased by the roots. The roots very much resemble those of the common bindweed, (*Calystegia sepium*.) It flowers freely in July and August. It is a very handsome climbing plant, with large double flowers, which are produced freely.—*Raised from a small portion of the root found in a dead Pæony root, in Box No. 22, from Mr. Fortune's mission in China. The box was sent from Shanghai, and stated to contain a plant of the double Convolvulus, which was supposed to be dead when received at the Garden in June, 1844.*

RHYNCHOSPERMUM JASMINOIDES. *Lindley.*—This is a slender climbing evergreen shrub, rooting along its branches, wherever it touches a damp surface, like ivy. When wounded, its branches discharge a milky fluid. The young shoots are slightly downy; the leaves opposite, oval, deep green, quite smooth, sharp

pointed, with minute scale-like glands in the place of stipules. The flowers are white, deliciously sweet scented, and produced in small irregular corymbs on the ends of peduncles considerably larger than the leaves. Their calyx consists of 5 narrow smooth convex sepals, rolled backwards, and much shorter than the tube of the corolla, with a very shallow toothed glandular ring surrounding the base of the latter. The corolla is about three quarters of an inch long, pure white, salver-shaped, contracted in the middle of the tube, with a partially spreading border, whose 5 divisions are wedge-shaped, truncate, and twisted obliquely. The anthers are 5, arrow-headed, placed just within the orifice of the tube, and separated by 5 slightly elevated hairy lines. The ovary consists of 2 separate carpels, and is surrounded by 5 oblong green emarginate hypogynous scales, which sometimes are slightly united at the edge.

The structure of this plant is not precisely that of the genus *Rhynchospermum* as given by M. Alph. De Candolle, for the scales beneath its ovary are not exactly united into a cup: but they are partially so; and as there is no other difference as far as can be ascertained from the plant in a state of flowering only, it may be referred to the genus. In habit it is more like an *Aganosma*, but its corolla has not the tapering lobes of that genus, nor do the nectary or stigma correspond with it.—*Collected at Shanghai, by Mr. Fortune.*

BRASSICA CHINENSIS. *Linn.*—Stems slightly glaucous, two or three feet high, not much branched, quite smooth. Lower leaves on long stalks, cordate-ovate, slightly running down the petiole; upper leaves amplexicaul; all of them blunt, and perfectly undivided. Flowers bright yellow. Calyx smooth, erect. Pods $2\frac{1}{2}$ inches long, arranged in racemes $1\frac{1}{2}$ foot long, rather compressed; valves with many longitudinal meshes for the veins, and a slightly prominent dorsal line; terminated by a point about half an inch long. Seeds in a single row, spherical, the size of mustard, deep purplish brown, about the colour of ill-ripened turnip seed, with scarcely any pungency when bitten. These pods are produced in very great abundance, and each contains about 30 seeds. It is a hardy annual which will grow freely in almost any sort of soil. The seed should be sown in April, in a sheltered situation; then in May the plants may be planted out where they are to remain, allowing 2 feet between each plant. This appears to be of no importance in a horticultural point of view. It may be cultivated by farmers for feeding cattle, or it may be grown for the same purpose as it is in China.—*Received from Mr. Fortune, Nov. 23, 1844, as the*

Shanghai oil plant. It is grown over the whole country round that city for oil.

THE CHUSAN HAN-TSI. — Mr. Fortune states that it is "a vegetable used as spinach by the Chinese. This variety grows strongly, and ought to be sown in beds or rows rather thinly."

It proves to be the *Amaranthus oleraceus* of Linnæus.

Stems erect, from 2 to 3 feet high, channelled, pale green; branches nearly round; leaves oval, cuneate at the base, 3 to 4 inches broad, and 5 to 6 inches long when well-grown. Petioles slender, 2 to 3 inches in length, of a still paler green than the stems. Flowers axillary, crowded, pale green.

It requires to be grown in a very rich light soil, and a rather moist temperature of about 60°. If proper accommodation can be afforded the seeds may be sown at any time, and the leaves will be fit for use in two months after. Some plants were put out in June, on a warm border, but did not succeed. At the first gathering, the tops may be cut off, and fresh leaves will be thrown out, but they will be smaller than those first produced.

A few leaves of sorrel improve the common spinach. The Han-tsi possesses in itself a very slight but agreeable acidity which renders the above addition unnecessary. It is to be regretted that it is not yet sufficiently hardy to succeed out of doors; but it can be easily cultivated in pits or in pots in any forcing-house, and thus afford an additional variety to the culinary list even in winter.—*Seeds of this vegetable were dispatched in a letter sent by Mr. Fortune, dated Chusan, September, 1844, and received at the Garden, January 9th, 1845.*

THE LONDON SEWAGE COMPANY;

A NEW SOURCE OF NATIONAL WEALTH AND POWER.

WERE we to announce the enormous value of the manure which flows into the Thames from London and Southwark, our readers would hardly give us credit for veracity; but it is a fact, that while the most uncivilized countries, value and appropriate such refuse as a fertilizer for the land, (preferring the most offensive mode of saving and transmitting it, to wasting it,) England pollutes her rivers with it, and loses it altogether. Many projects have been submitted from time to time for saving and selling it to the cultivators of the land; and when it is considered that an enormous expenditure has been incurred for the excrement of birds from abroad, and more than a million of money has been, we had almost said, thrown away for the foreign article, while that which is at home could be placed upon the land *without one shilling of*

money leaving the country, the entire expenditure being appropriated to British labour, and material for building, and render all foreign articles of the kind useless, it seems to us a strange perversion of knowledge as well as of money, to have allowed such an event to come off; but it would be worse, now that our eyes are open to the fact, to continue this unnatural practice of buying abroad, what is only a substitute for that which is wasted at home. We have said that many schemes have been propounded for saving the sewage of London. It was the extravagance of each project that defeated it. Among the most widely published was one for carrying the liquid by means of pipes through the country, and on to the various farms, in the same way that gas and water for domestic purposes are conveyed. The folly of this has been well exposed in the Report of Thomas Wicksteed, Esq., Engineer to the London Sewage Company. We shall not follow this gentleman through all his exposures of the absurdities on which the plan was founded, but some of them are worth a distinct notice. For instance, two analyses of the liquid, which we may call sewage water, show that it contains one pint in 236 of solid manure (Aikin), or one pint in 214 (Phillips). Now whoever conceived the idea of conveying 236 tons of liquid for the sake of the one ton of solid manure it contained, must be little short of an idiot; and we are quite prepared, after such a display of inventive genius, for any extravagance to match. The idea of laying down pipes, for instance, to eight millions of acres, for the purpose of squirting the liquid manure over them at the rate of 236 tons for every ton of solid manure to be deposited, is worthy of almost any hair-brained schemer: but Mr. Wicksteed's mode of treating this is perhaps worth quoting.

"For who would think of laying pipes over eight million of acres, embracing the whole area of the following counties; viz. Middlesex, Surrey, Kent, Sussex, Hants, Wilts, Dorsetshire, Berks, Oxfordshire, Bucks, Herts, and Essex? In addition to this, it may be supposed, the inhabitants of the numerous large towns in those counties would be as desirous as the inhabitants of the metropolis, both for reasons of health and profit, to get rid of their sewage water; and how can it be expected that the landowners near those towns should seek from the metropolis that which they can obtain at much less cost in their own immediate neighbourhood? Nevertheless, as the evidence given before the Health of Towns Commission, in which the practicability of such a scheme is attempted to be shown, is continually quoted, and has very recently been so in a report on the improvement of Leicester,

by the 'Water supply, Drainage, and Towns Improvement Company,' it may be worth while to enter further into detail, with reference to the statements on which these opinions are founded; and if, in doing so, I may find occasion to mention any individual by name, it is solely for the sake of distinguishing clearly the statements or opinions on which I may be commenting, and not with any intention to make personal allusions."—Pp. 5, 6.

This relates to the first crude notions of a projector; but Mr. Wicksteed, in a pamphlet printed for the new Company, goes at once searchingly into the merits of the scheme, which was, it seems, put forth a second time for the avowed purpose of showing the matured plan, and forming a company, to be called The Metropolitan Sewage Manure Company, with a capital of one million five hundred thousand pounds, for distributing manure water by pipes and machinery. In the prospectus of this concern, the name of a Mr. Smith appears, as consulting agricultural engineer, and therein it is stated, that

"A plan was *long since* formed, which has undergone the consideration of *practical and scientific men*, and the result is, that a *complete* scheme has been *matured* for conveying the sewage water of London, by means of a system of *pumping-engines and pipes analogous* to that of the *great Water Companies*, and thus distributing the fertilizing fluid over the land, in such manner and proportions as may be best adapted to the various kinds of field and garden cultivation.

"The average quantity required for agriculture is estimated at 80 *tons per acre*, which can be supplied within about 20 *miles round the metropolis* at less than a quarter of the cost of stable or farm-yard manure, and at *one-tenth of the expense*.

"The contents of these sewers will be raised by powerful steam-engines, and distributed by pipes over an extent of *sixty square miles*, through the gardening and agricultural districts to the *westward*. A sum of 300,000*l.* only will be required to carry this part of the plan into effect.

"A *careful and moderate* calculation has been made of the annual outlay and income, from which it can confidently be stated, that the *undertaking will realize a net profit of at least 15 per cent.*"—Pp. 7, 8.

Among the authorities mentioned in behalf of the practicability of this plan is Dr. Arnott, who states, that "engineers who pump from the Thames many miles above London, to supply pure water to the inhabitants, could as easily, by pumping away to any desired distance the fluid from the drains, supply the most valuable manure yet known, &c." Now,

Mr. Wicksteed disputes a great many of the facts as to the conveying, the cost, &c.; but we begin at the beginning. As to the liquid manure capable of being pumped and sent miles through pipes, we deny that it is the most valuable manure yet known. It is not nearly so valuable as the solid manure from the same source. However, Mr. Wicksteed shall deal with this matter himself; for it must be recollected that Mr. Smith's plan is to disperse the water by means of service-pipes to every forty acres, those to be laid out in ten-acre fields, and a hose three hundred and twelve yards long to this service-pipe is to do the business; and now we leave the rest to Mr. Wicksteed, who says, speaking of the projector:—

"He also gives the following data: main pipe, one mile for suburbs, and two miles to cross the square, or three miles total length; diameter twelve inches, and the service pipes four inches . . . 'which is very ample, as never more than two or three jets will be playing from one service pipe at the same time.' The quantity of water Mr. Smith proposes shall be raised is 45,875,200 gallons, the height 200 feet, and the power of the engine thirty horses. As Mr. Smith does not state for what period of time he intends the engine to be employed to distribute the quantity of water, the only way in which that can be ascertained is by calculating what an engine of the power described by him can raise: thus, a 30-horse power engine will raise 79.2 cubic feet of water 200 feet high in a minute, and 57,024 cubic feet, or 355,373 gallons, of water in twelve hours. If the farmer does not manure his land on Sundays, then it would take 21½ weeks per annum, working 12 hours per diem, or 10¾ weeks per annum, working night and day, to distribute the 45,875,200 gallons.

"The quantity of sewer water to be supplied is equal to 17,920 gallons per acre per annum, one-third of which Mr. Smith says can be delivered in one hour, or 99.55 gallons, or about 16 cubic feet, per minute. At this rate the engine would supply five jets only at a time. Mr. Smith provides for 64 jets, and eight lines of services, each two miles long, which gives eight plugs to each line of service pipes. Mr. Smith says he never intends more than two jets to be playing at one time on a service. But if, instead of the jets playing for an hour over an acre, they are playing for rather more than three hours; then two jets on each service, or sixteen jets, may be playing together, and the engine will supply them. *This is the most favourable view of the case for Mr. Smith, as affects the cost.*"—Pp. 13, 14.

He goes on to demolish the scheme by dis-

turbing the foundation, showing that the estimates of power, of cost, and of difficulties, are all wrong. But there is one point on which failure must take place. If the quantity required be correct, and it must be so to bear out one part of the estimate, the liquid must be accumulating until there is enough to answer the demand; and as the demand for the land for a whole year must be applied at the proper season, during six weeks, the reservoir must be of no small dimensions. Mr. Wicksteed gives us an idea. He says:—

“As the sewage water is constantly flowing every day throughout the year, while the period for delivering it upon the lands is but six weeks—*i.e.* 504 hours in 8,760, it is evident that the reservoir must be capable of holding the supply afforded during 8,256 hours, or 5,020,278 tons; consequently, the capacity of the reservoir will be 6,663,917 cubic yards, and at a depth of twelve feet, or four yards, its area at the mean water line will be equal to 344 acres—if a square, the length of each side will be 1,290 yards, or nearly three-quarters of a mile.”—P. 22.

But the most astounding part of the scheme is the quantity of water, 236 tons, for each ton of solid manure contained in it. Where is the water to run to in valleys and level grounds when it has deposited its solid manure? Mr. Wicksteed says:—

“It is stated that sewer water would be very useful for *tillage lands*, and that a *shower* of it upon the young growing crops would be very advantageous; but what would the farmer think of a $2\frac{1}{2}$ inch hose, 312 yards, or a furlong and a half long, weighing, with the water contained in it, nearly $1\frac{1}{2}$ tons, being drawn over the crops, to distribute such a jet of water, as before described? And, even supposing the crops would bear this, how could the water be distributed equally like a shower of rain? and, if it were not so, is it not a fact, that in some parts of the field, large quantities of the sewer water would be deposited, and in other parts scarcely any; in some places too much, and in others too little? and what kind of crop must the farmer look for from such a distribution? It would be very similar to neglected pasture land, where, if the manure that falls from the cattle is not distributed, it causes the grass to become coarse and rank on those spots where the dung has fallen. I have now, I think, stated enough in my examination of the authorities quoted in support of the plan for distributing *sewer water*, whose testimony is, of course, open to remark and consideration by all, to show that, in my opinion, no reliance is to be placed upon them.”—Pp. 28, 29.

This condemnation is requisite, is sweeping

and conclusive. Let us now look at Mr. Wicksteed's plan for applying the manure of London. He proposes to carry off all the sewage by a tunnel-drain considerably below the common sewer on the north side of the river, down the streets and roads nearest to the river, and so not interfere with the present sewers, nor with the wharfs and banks of the river, nor the private property attached to them, from the Ranelagh sewer to Barking, and there to form a reservoir, where the solid manure shall subside, and, if there be any deficiency of amount, be precipitated with lime, which would throw down a good deal more held in solution. Here the process of drying and preparing for transit to take place. Similar proceedings on the south side of the river will make a second *dépôt*. He guards against moving the mere mud by turning the drainage water that comes after rains into the river. The estimates and calculations are vast, but the summary is as under.

ESTIMATES.

“The cost of the proposed sewers, reservoirs, buildings, wharfs, machinery, and land, on both sides of the river, including all engineering charges and expenses, from the commencement to the termination of the work, except the expenses of parliamentary opposition, will not exceed 1,300,000*l.*, which will leave 200,000*l.* for law and parliamentary expenses, and for real or imaginary cases of compensation, the total being 1,500,000*l.*—the capital proposed to be raised.

ANNUAL EXPENDITURE AND REVENUE.

EXPENDITURE.

“The total annual expenses of carrying on the works, including labour, coals for engines, and for drying the manure, lime, offices, officers, rent, taxes, repairs of works and machinery, will not exceed	£300,000
“Reserved fund for renewal of works, improvement of the existing sewers, if beneficial to the Company, &c. &c. 5 per cent. on capital	75,000
“Profit at 15 per cent	225,000
	<hr/> £600,000

REVENUE.

“206,590 tons of manure, in a highly dried state, compressed and packed, at £3 per ton	£619,770
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“The necessary works might be so far completed in two years from their commencement, as to be in partial operation, and ready to produce a revenue.

“The price per ton, in the above estimate of revenue, is low, and may be still further reduced, if the manure be taken from the works in a moist state, or before drying,

according to the quantity of water which it contains.

"It is not to be expected that this manure will entirely supersede the use of others; because, although there are many descriptions of land on which this manure alone would produce a very advantageous result, there are others on which the existing manures, with an admixture of the new manure, would be more useful. As it could not be used in any one locality to the exclusion of all other manures, it became a necessary and important feature of the present plan, that the manure should be obtained in the most concentrated form, so as to allow of easy transmission, at a low price, to any part of the world—failing in this, there would undoubtedly be great difficulty in obtaining a market for the quantity which will be produced."—Pp. 48—50.

Upon the whole, this is the most rational plan we have seen of the many which have been propounded; and it is no small recommendation, that it will remove millions of loads of filth which is constantly polluting the river, and destroying the fishery, as well as endangering, beyond all calculation, the health of the people who reside on its banks or drink its water. With regard to the nature of the manure, there are numerous persons, in some localities, who esteem it beyond praise. It is so strong in all the qualities of fertilizing dressings, that among practical men it is doubted whether guano is better; and a dressing of night-soil, when well decomposed, has been long looked upon as the richest dressing that could be given; indeed, if given strong enough, or in too large quantities, it is as destructive as guano itself. Nor do we think it should be used as a general manure, without the same caution, restriction, and preparation, as is required by that potent article. Mr. Winksteed says:—

"In conclusion, I beg leave to express my hope that I have shown that the proposed undertaking will be beneficial to the *public*, the *landowners*, the *shipping interest*, and the *railway* and canal carriers, as well as *profitable* to the promoters."—P. 51.

And there can be no doubt of it, if the project be carried out; for being close to the river, the manure may be conveyed by the shipping and canal boats to the coast, and then inland, at a cheap rate, thus giving work to thousands after it is ready for use, as well as in the construction of the gigantic works; while the facility which it will afford for manuring at a reasonable rate, will enable the owners of poor land to bring it into profitable cultivation, and by these means to increase the demand for agricultural labourers.

TORREYA TAXIFOLIA.

(Arnott.)

THE YEW-LEAVED TORREYA.

Torreya taxifolia is a plant allied to the common Yew, but forming an intermediate link between that and other allied plants, otherwise separated both botanically and geographically. It is a native of North America, occurring in considerable abundance about Aspalaga, and elsewhere, on calcareous hills,



in Middle Florida, where it was first noticed by botanists in 1835. In that locality its wood is extensively used for most purposes to which small or middle-sized timber can be applied; and where it is called "stinking cedar," from the strong odour of its wood, especially when burned. The tree attains a height of about forty feet, with an occasional diameter of eighteen inches, with numerous spreading branches, and a general outline something resembling the Hemlock Spruce Fir. The wood is rather heavy, of a red colour in old trees, close grained, and, like nearly all of its relatives, not very liable to the attack of insects, from the quantity of terebinthine matter with which it is charged. This renders the wood very durable, even when exposed to the vicissitudes of the weather. A pasty turpentine, of a blood-red colour, oozes sparingly from the bark; the leaves are ranged in two ranks, one on each side of the branches; they are of rather a pale green colour, of nearly equal breadth, until near the end, when they fall off into a sharp terminal point. The under-side is of a glaucous hue, with two distinct bands of a light green colour, one on each side of the mid-rib, and running the length of the leaf, which, as well as the

regularity of the two-ranked arrangement of its leaves, distinguishes it. at first sight, from *Podocarpus Totara*, a plant considerably resembling *Torreya*, and with which it might be easily confounded in a small state. The entire fructification is about the size of a nutmeg, consisting of a berry, deeply perforated by its investing membrane, something after the manner of that fruit; while the external covering is of a leathery texture, almost entirely enveloping the other, having only a small perforation at the summit, instead of forming an open fleshy cup, as in the Yew. The plant is yet rare in Europe, and, although from the north of Florida, doubts may be well entertained of its standing the open air in Britain, except in the most favoured situations.

Of its treatment little can be said at present; but, from its thick roots, and general appearance, a free loam, and a good supply of moisture, during the growing season, would appear to be requisite. From its scarceness, the plants are, at present, cultivated chiefly in pots, and the greatest care taken to forward their growth by all possible appliances; but, in the soil previously recommended, with a liberal supply of water, good drainage, and not too glaring an exposure to the sun, there can be little doubt of the *Torreya* succeeding well, either in a house, or in a good situation outside: at present, however, a winter berth in an airy greenhouse, or pit, will be desirable. In its natural habitat, it is said to be a rapid growing tree, and there can be little doubt that a treatment similar to that recommended above, would soon produce some good specimens here. Whenever it may be tried out of doors, as a hardy tree, (and it would make a handsome addition to the arboretum,) it would be well to try some plants, in prepared spots, among chalk or calcareous stones, so as to approach its natural habitat as nearly as possible. At any rate, in very sandy soils, it would be necessary to increase the retentive powers of the soil, in order to give the plant a fair trial. From its natural place of growth, reasonable hopes may be entertained of its succeeding in many spots in the southern counties of England.

NEPTUNIA PLENA.

(*Benth.*)

THE DOUBLE-YELLOW WATER-SENSITIVE.

BESIDES the name here adopted—*Neptunia plena*—this plant has at different times, and from different persons, received no less than seven others, which we here repeat:—*Neptunia polyphylla*, *Desmanthus polyphyllus*, *D. punctatus*, *D. plenus*, *Mimosa adenanthera*, *M. punctata*, and, finally, *Mimosa plena*, the original name given to it by Linnaeus. Most

of these changes, it will be perceived, have reference to the name of the genus, and have been rendered necessary, as the plants, which had been formerly referred to *Mimosa*, became more and more fully known. The name of *Neptunia*, which this plant and one or two others now bear, was applied by Loureiro, a Portuguese botanist, “who ventured to enlist the god of the ocean in the service of botanical nomenclature.”

The plant is an herbaceous stove aquatic, with long spongy floating stems, which throw out innumerable thread-like roots; these stems, at the base, are prostrate, or floating in the water, but quickly assume an ascending or somewhat erect position, producing moderately large bi-pinnated leaves; from the axils of the upper of these leaves the flower-heads are produced, singly, on long stalks. The leaves are composed of from three to five pairs of pinnæ, (the branches or divisions of this kind of leaf,) each of which consists of many—from twelve to forty pairs—of smallish oval lance-shaped leaflets, which possess the property of being irritable, though in a far less degree than the common sensitive *Mimosa*, or the sensitive Wood-sorrel, noticed at p. 24. At the nodes, or joints, are a pair of membranaceous obliquely heart-shaped stipules; the peduncles, which are axillary and solitary, are furnished with one or two bracteas, of similar form and substance to the stipules. The flowers are of a palish yellow colour, and grow in ovate-globose heads, looking like little bunches of golden threads; they are succeeded by oblong seed-pods, or legumes, containing from five to twenty seeds. The stem of the plant, which grows rather tall, is compressed into a somewhat three-angled figure.

The Duke of Northumberland's gardener at Sion House bloomed this plant during the summer of 1845, from seeds recently sent from Jamaica by Mr. Purdie, the collector for the Kew Botanic Garden; and cut specimens were produced at the meeting of the Horticultural Society, held in October last. Plants, apparently of the same species, bloomed about the same time in the garden of the Royal Botanic Society in the Regent's Park. It appears to be common in all parts of tropical America, having been received from Guiana, Brazil, Mexico, and various West India Islands. It seems probable that it is somewhat variable in appearance, and perhaps this may have partly given rise to its different names. Linnaeus called it *Mimosa plena*, or the double-flowered *Mimosa*, in allusion to the broad petal-like stamens which occur in the lower flowers of each head.

A material, resembling the beautiful and delicate rice-paper of the Chinese, is obtained from a species of *Neptunia*, called *oleracea*,

but it is coarse, and much inferior in all respects to the true rice-paper. The spongy floating stems of the same plant, which are crisp and juicy, are also said to be used by the Chinese in salads, but Loureiro adds that they are not very digestible.

The *Neptunia plena* is a stove plant, apparently a perennial, though it has been stated to be an annual. It is truly aquatic, and therefore requires to be grown in water. A pot, or pan, of considerable breadth should be selected, in the bottom of which three or four inches of loamy soil should be placed; in this the lower part of the plant is to be fixed, the upper parts of the rooting stem being allowed to float in the water, which at first may be shallow, and afterwards increased in quantity, from time to time, as the plant grows. Being a native of the hottest part of the tropics, the plant will only succeed satisfactorily if the water is kept quite warm, or at a temperature of about 80 degrees. One of the greatest errors in cultivating stove aquatics is the subjecting of the roots to occasional chills of cold water; nothing can be more opposed to healthy growth, and the attaining of a flowering state. This state of things is usually owing to the circumstance that aquatic plants are placed in the tank from which water is used for the various purposes of watering, syringing, &c.; and, the deficiency being supplied by additions of cold water, the plants are, in consequence, submitted to sudden checks in their development. This ought not to be; a regular and even warmth of about 80 degs. should be kept up, and the plants will then be enabled to grow without hindrance, and attain the degree of perfection of which they are susceptible. This plant belongs to that part of the order of leguminous plants (*Leguminaceæ*), which is termed *Mimosæ*; and to the Linnæan *Polygamia Monœcia*.

THE PLANTS OF THE ANTARCTIC REGIONS.*

THE recent scientific exploratory voyage, under the command of Sir James Clark Ross, has done much towards extending an acquaintance with the vegetable forms of the remote antarctic regions. It is but seldom indeed that such facilities are enjoyed as those which Dr. Hooker possessed on the occasion in ques-

tion, for we are informed "that it was enjoined to the officers that they should use every exertion to collect the various objects of natural history which the many heretofore unexplored countries about to be visited would afford." This it appears they did, and the publication of the materials thus collected under the authority of the Government is a boon to science, and an example worthy of being far more generally followed than it is. Botany in particular, will derive much benefit from the very able manner in which Dr. Hooker has treated the trust committed to his charge.

The first botanical phenomenon met with on the voyage, was in the neighbourhood of Marion's and Prince Edward's Islands, in a cold inhospitable latitude. Here a remarkably gigantic sea-weed, called *Macrocystis pyrifera*, was found (April 1840) in abundance; but the officers were much disappointed in not being able, from the state of the weather, to effect a landing, a rich harvest having been anticipated from these unexplored though inhospitable islands. At the Crozet Islands the same disappointment awaited them. These islands are all volcanic, and some of them inaccessible: "the mountains rise in peaks and cones to an elevation of 4,000 to 5,000 feet, exhibiting patches of perpetual snow on the summits, while dense fogs frequently envelope their bases, borne from the sea to such an elevation that the highest points alone are visible." "At Kerguelen's Island, (which we left in July 1840,) all the plants that had been originally detected by the illustrious Cook, were gathered during the two and a half winter months that the *Erebus* and *Terror* staid there, together with many other species, a remarkable proof of the uniformity of the climate, and the comparative mildness of the winter season." In the unexplored region southward of Campbell's Island, the *Macrocystis* and *D'Urvillea* were found (Dec. 1840) in large floating patches, nearly as far south as any open water remained free of bergs, in lat. 61° S. During three months in the latter part of 1841, in which the expedition remained at New Zealand, extensive materials were collected for a Flora of New Zealand. Subsequently, after visiting the great Victoria (Ice) Barrier, and reaching 78° 10' S. lat., the highest then attained, "a prolonged stay at the Falkland Islands, though the season was winter, (April to September, 1842,) afforded ample opportunities for thoroughly investigating the Flora of that interesting and now highly important group, which, though it had been partially examined by Admiral D'Urville, and previously by the officers of that unfortunate ship, the *Uranie*, under the command of Captain Freycenet, still afforded considerable novelty. On the 6th of September, the early

* "The Botany of the Antarctic Voyage of H. M.'s Discovery Ships *Erebus* and *Terror*, in the Years 1839—1843, under the command of Captain Sir James Clark Ross, Kt., R.N., F.R.S., &c. By JOSEPH DALTON HOOKER, M.D., R.N., F.L.S., Assistant Surgeon of the *Erebus*, and Botanist to the Expedition. Published under the authority of the Lords Commissioners of the Admiralty. London: Reeve Brothers, King William-street, Strand. 1844. Part I.

spring of the southern latitudes, the Erebus and Terror, with a portion of the officers, sailed from Berkeley Sound (Falkland Island) for the neighbourhood of Cape Horn, and arrived there, after having been driven far out of their course by the equinoctial gales, on the 21st, casting anchor in St. Martin's Cove, Hermit's Island, lat. 56°, within a few miles of the far-famed Cape Horn, which is immediately opposite the mouth of the Cove. This is the most southerly spot on the globe, which possesses anything above a herbaceous vegetation; here in the sheltered bays the two kinds of Antarctic Beech, the evergreen and deciduous, constitute a dense though small forest, and ascend in a stunted form to an elevation of 1000 feet on the hills. Many of the plants gathered during Cook's first voyage, by Sir Joseph Banks and Solander, and by Forster during his second, as also those which Mr. Menzies had detected, when accompanying Vancouver's expedition, and which have not been hitherto published, were found again; and when the ship returned in November, Captain Ross transported many hundreds of young beech-trees, and caused them to be planted there, in hopes that the productions of so near a country might be found to succeed on these treeless islands." Seeds were also sent to the Royal Botanic Garden at Kew, from which plants have been raised and distributed. On Cockburn's Island, a small volcanic island in lat. 64°, the vegetable productions amounted only to twenty cryptogamic species, three of which were sea-weeds.

Respecting the climate which prevails in the Antarctic circle, we find the following remarks:—

"The vast proportion which water bears to land, tends to render the temperature uniform throughout the year, and the farther south is the position, the more equable does the climate seem to be. No analogy can prove more incorrect than that which compares the similar degrees of latitude in the north with those of the south. The most casual inspection of the map suffices to show the immense proportion of sea to land in the southern hemisphere, the mass of the continents terminating to the north of lat. 40° S., America alone dwindling away to the fifty-sixth degree. The scattered islands discovered to the south of this, are therefore removed from the influence of any tracts which enjoy a better or continental climate. The power of the sun is seldom felt, and unless in the immediate neighbourhood of land, and accompanied by a comparatively dry land-wind, that luminary only draws up such mists and fogs as intercept its rays. After entering the pack-ice between 55° and 65°, the thermometer seldom, during any part of the summer day, rises above 32° or falls below 20°; and

while the southerly winds bring snow, the northerly ones transport an atmosphere laden with moisture, which, becoming at once condensed, covers the face of the ocean with white fogs of the densest description. All islands and lands to the southward of 45° partake more or less of this inhospitable climate, which, though eminently unfavourable to a varied growth of plants, still, from its equable nature, causes a degree of luxuriance to pervade all the vegetable kingdom, such as is never seen in climates where the vegetable functions are suspended for a large portion of the year. The remoteness of these islands from any continent, together with their inaccessibility, preclude the idea of their being tenanted, even in a single instance, by plants that have migrated from other countries; and still more distinctly do they forbid the possibility of man having been an active agent in the dissemination of them. On the contrary, the remarkable fact that some of the most peculiar productions are confined to the narrowest limits, is a strong argument in favour of a general distribution of vegetable life over separate spots on the globe. Hence it will appear, that islands so situated furnish the best materials for a rigid comparison of the effects of geographical position and the various meteorological phenomena, on vegetation, and for acquiring a knowledge of the great laws according to which plants are distributed over the face of the globe."—Pp. xi. xii.

The group of islands called Lord Auckland's is twenty miles long and eleven in breadth, and, as it appears on approaching from the sea, presents an almost equal distribution of wood, shrubs, and pasture land. Dr. Hooker describes it thus:—

"The mountains are low and undulating, nowhere exceeding 1400 or 1500 feet, clothed, for their greater part, but scarcely to the very summits, with long grass, and frequently covered, during November and December, though not generally, with snow. The climate is rainy and very stormy, so that on the windward sides the plants are stunted and checked, and resemble those of a higher southern latitude, or of an elevation several hundred feet above that which the same species inhabit on the sheltered parts. The whole group of islands appears formed of volcanic rocks, mostly of black trap, whose decomposition, especially among the ranker vegetation of the lower grounds, produces a deep rich soil. A *Myrtaceous tree* (*Metrosideros umbellata*) forms the larger proportion of the wood near the sea, and intermixed with it grow an arborescent species of *Dracophyllum*, several *Coprosmas*, *Veronics* (frutescent), and a *Panax*. Under these, and particularly close to the

sea-beach, many *Ferns* abound; conspicuous among them is a species with caulescent or sub-arborescent stems half a foot and upwards in diameter, crowned with handsome spreading tufts of fronds. Beyond the wooded region, some of the same plants, in a dwarf state, mingled with others, compose a shrubby broad belt, which ascends the hill to an elevation of 800 or 900 feet, gradually opening out into grassy slopes, and succeeded by the alpine vegetation. It is especially towards the summits of these hills that the most striking plants are found, vying in brightness of colour with the Arctic Flora, and unrivalled in beauty by those of any other Antarctic country. Such are the species of *Gentian*, and a *Veronica* with flowers of the intensest blue, several magnificent *Compositæ*, a *Ranunculus*, a *Phyllachne*, and a *Liliaceous* plant whose dense spikes of golden flowers are often so abundant as to attract the eye from a considerable distance. Here too the vegetable types of other Antarctic lands may be seen in the greatest number, and even such as are analogous to the Arctic productions, none of which can be more decided than a species of *Hierochloa*, *Potentilla*, *Cardamine*, *Juncus*, *Drosera*, *Plantago*, *Epilobium*, several *Grasses*, and *Mosses* belonging to the genera *Andræa*, *Conostomum*, and *Bartramia*. Many of the plants in the lower grounds are no less striking and beautiful, as an arborescent *Veronica* bearing a profusion of white blossoms, a maritime *Gentian*, a handsome large-flowered *Myosotis*, the magnificent *Aralia polaris* (Hombr. and Jacq.), two fine kinds of *Anisotome*, and several beautiful *Ferns*.

"Campbell's Island, two degrees to the southward of Lord Auckland's group, is smaller, far more steep and rocky, with narrow sheltered valleys, and the broader faces of the hills much exposed, and hence bare of any but a grassy vegetation. Except in the bays, the coast is as iron-bound as that of St. Helena, the rocks assuming even a wilder and more fantastic form. Ever lashed by heavy swells, and exposed to a succession of westerly gales, this land affords no holding-place for such trees as skirt the beaches of Lord Auckland's Islands. In the narrow, sinuous bays, however, the scene is quite changed, for they are often margined by a slender belt of brushwood, with an abundant undergrowth of *Ferns*, stretching up the steep and confined gulleys.

"The geological features of the two islands are alike, and the only difference in climate consists in that of Campbell's Island being still more forbidding and dreary. Fogs, snowsqualls, and mists, are the prevailing meteorological phenomena of these regions, and though such a state of atmosphere has a tendency to check the general mass of vegetation, still the constant moisture and equable temperature

thus afforded support a luxuriant herbage in the very sheltered valleys. In Campbell's Island, the mountains, which rise very abruptly to about 1300 feet, are almost bare of vegetation, their rocky sides presenting a larger proportion of *Grasses*, *Mosses*, and *Lichens*, than in Lord Auckland's group. Though all the handsomer plants are also found in the larger of the latter islands, yet, by growing here at a much lower elevation and in far greater abundance, they form a more striking feature in the landscape, the golden-flowered *Liliaceous* plant being conspicuous, from its profusion, at the distance of a mile from the shore."—Pp. 2, 3.

The first part contains detailed descriptions of twenty-six species, and several varieties found in the Auckland and Campbell Islands. Among these is *Ranunculus pinguis*, a dwarf



Ranunculus pinguis (half size.)

species of Crowsfoot, which would no doubt form a handsome small hardy herbaceous plant: it is a stemless perennial plant, with roundish indented leaves, all of which spring from the root; the flowers are yellow, about an inch across, one, or sometimes two, rarely more, on a stalk. After the flowers are past, the numerous carpels grow into a globose capitulum, or head, which is about the size of a common nut; each of the ovaria is terminated by a small bluntish hook, which gives the whole the appearance of being a head of small hooks. A variety of the English *Cardamine hirsuta*, called *subcarnosa*, having very fleshy leaves, was found in Campbell's Island, and was abundantly gathered, and used as salad by the officers of the ships, its leaves being an excellent antiscorbutic. *Metrosideros lucida* is the largest tree on Lord Auckland's group, and the most abundant, skirting the whole line of

sea-coast with a broad belt of evergreen flat-topped forest wood; the single trees are from twenty to forty feet high, inclined, with trunks of from two to three feet in diameter, often flattened, seldom erect; the branches are spreading and ascending, from the inclemency of the climate and the violence of the wind, forming stag-headed trees, whose tops are perfectly flat, as if cut with a scythe. *Anisotome latifolia* is one of the noblest of umbelliferous plants, attaining the height of six feet, and bearing umbels of rose-coloured or purplish flowers, each compound umbel being as large as the human head: the plant emits, when bruised, an aromatic smell.

The style of the plates, and the execution of the work, reflect the greatest credit on the editor, Dr. Hooker, and the publishers, Reeve Brothers.



THE WEeping ELM.

THE Weeping Elm, (*Ulmus montana pendula*), is a variety of the Wych Elm, of considerable beauty, and, from the peculiarity of its growth, well adapted for planting singly, on lawns, or in front of plantations. The branches grow in an almost flat, fan-like manner, generally more to one side of the stem than the other, and assume different angles of inclination, according to their age; for, while the topmost branches are slightly elevated, the lowest ones are almost perpendicular to the stem. The young shoots are of very stout, vigorous growth, plentifully furnished with buds, and leaves of a coarse, strongly nerved consistence, and dark green colour, and which are also more or less three-lobed, or furnished with two coarse teeth, one on each side, about one-third below the apex. Trees of good size generally flower and seed very profusely, in most seasons. It is of rapid

growth, in favourable soils (such as strong loams or clays,) attaining from eighteen inches to two feet additional height in a season. There are good specimens in the garden of the Royal Botanic Society, Regent's Park; in the Horticultural Society's Garden, at Chiswick; and also in the Hammersmith and Fulham nurseries.

THE USE OF GUANO.

WE have already given useful instruction in the application of manure, and our readers are in some measure acquainted with the nature of Guano; but, notwithstanding the assumed exhaustion of the stock, it will not cease to be produced, nor have we any right to suppose that there will be any lack of it for a considerable period at least. The world is not yet so well known as to have revealed all her treasures in this fertilizing material, and the economical and judicious use of Guano is an object worth seeking. We do not go all the lengths of some admirers, and recommend it for every thing; and we are just as slow to condemn it on account of its failures, for many things contribute to unfortunate results. The dung of sea-birds is much stronger than that of land-birds, and pigeons' dung is stronger than that of domestic poultry; but, although the supply of Guano, in any large quantity, has been the work of late years, the use of it, as a fertilizing material, has long been familiar on the coast and in many parts of the earth. If we had to give florists and farmers short lessons on the general application of Guano, we should say at once, "if the Guano be pure, use it as you have used the dung from the dove-cote, but use only half the quantity." This, however, would be of no use to persons who had not learned the use of pigeons' dung, and therefore it is necessary to be somewhat more explicit. Mr. Clarke's pamphlet on the use and mode of application of Guano, entitled *Clarke's Practical Instructions*, is one of the most useful pamphlets that has been published on the subject; and the following paragraph from *Gardening for the Million*, contains an excellent lesson:—

"A very simple and economical mode of preparing Guano for use, is to spread two hundred weight of dry sifted mould, &c., three or four inches thick, one hundred weight of sifted Guano over it, and two hundred weight of the mould, &c., on that again: leave the heap for two or three days protected from the weather; then let it be well mixed and sifted through a common garden sieve. Thus prepared, it can be sown without inconvenience to the farmer, and spread without loss evenly over the field. Guano may be also used with equal safety in a liquid state, dissolved in

water; and perhaps this is the most effectual mode of developing its powers, for, like all concentrated fertilizers, it requires a considerable supply of moisture, and has always exhibited the most productive results during wet seasons. For this reason it is particularly desirable that the dry mixture, or compost, as we shall call it, should be used immediately before rain. But, as irrigation is too tedious and costly for extensive operations, the liquid application is almost necessarily confined to the flower and kitchen garden."—Pp. 72, 73.

We could mention many other practical articles, treating on this subject, to show that its useful application to crops in this country has been well understood by many writers, who have founded their papers on the safest of all bases—experience. It may, however, be interesting to the English cultivator, to know what is said to be the practice and the results in the United States. We confess there is a vagueness in a large portion of the paper we are about to quote—a vagueness that is discernible in many random writers: and we hardly know whether to believe altogether that Mr. Teschemacher has experience enough to warrant him in setting up teacher; at any rate, no old cookery-book, which described the ingredients of a dish to be applied in half-pennyworths, or pennyworths, ever left the reader more completely in the dark than does this said production of Mr. Teschemacher. Our readers may judge for themselves. It may be useful to learn how to apply the substance if the paper can be only depended upon thus far; but as to the quantity to be applied, for all this author aids them, they have it to guess, or learn from some other source; yet a very high authority in gardening matters says, speaking of these very lessons, "all we have to do, is to imitate their practice thoughtfully and cautiously;" and then again, after showing, much after the same manner as we have, the kind of instruction conveyed by this American horticulturist, he says, "*This sort of practical evidence is worth a ship-load of speculation.*" We cannot account for this highly favourable opinion from a gentleman supposed to know something about gardening, for we confess that, supposing the author may be depended upon for facts, all we learn is, that he has applied Guano to certain things, but not one word about how much! As instances of this vague and uncertain, as well as loose mode of giving directions, let us instance the application to maize. "Each crop has three applications of manure; the first in a *small quantity*, at the time of sowing the seed, the second a *larger application*," &c. Can anything be more indefinite? what is a small quantity? And suppose we could learn what that means,

what increase is necessary for the larger application? Let us look at its application to lawns. Before laying the grass down we are to apply Guano "*by strewing the surface*;" vines are to be watered with "*a solution of Guano.*" For Pears, the author says: "The method I adopted was to draw a deep trench with a hoe, to strew Guano (not a word about quantity) in the trench, mix it up with the soil; over this put one inch and a half of earth, then sow the seed and cover up." For Strawberries he "drew a trench with a hoe between the rows of plants, about two inches deep, put in Guano (not a syllable about quantity), stirred it up, and covered it over." Roses, when forced, are to be "watered twice or three times a-week with Guano water;" never mind about strength; and this is the kind of practical evidence which is "worth a ship-load of speculation." The early papers on this subject, written by persons who were altogether ignorant of its nature, ruined many valuable plants and crops; and here we have a man writing as if the subject were novel, and that, too, in a style calculated to carry devastation among all those classes who do not consider the strength of the material. The very attempt to follow the practice is the most dangerous speculation. A very small excess kills plants out right; and here we have first to speculate in the amount of "*a small quantity*," then how much ought to be used to "*strew the surface*," or to "*strew in a trench*," then how strong "*a solution*" ought to be; in short, except the application to fruit-trees, which we extract, there is nothing to depend on, even if the author have credit for veracity.

"*Trees.*—"The experiments with guano on trees which have come under my observation, including exotics, number about one hundred and fifty. The action has invariably been to produce large foliage, of a deep, healthy green; or with plants, usually covered with a white powder, called *glaucous*, to increase this appearance, and to shorten the joints or intervals from leaf to leaf. This last action, as respects fruit-trees, is of the utmost importance; every one being aware that long-drawn, long-jointed shoots are the least valuable or productive, and that the fruit-bearing spurs on trees are but branches with shortened joints. Hence the production of short-jointed, stocky branches, is the production of so much fruitful wood; and if, by proper pruning, the sun and air are admitted so as to ripen the wood, a plentiful crop must be the result. The best mode of application to fruit trees seems to be, first, to consider where are the young feeding roots,—that is, at what distance from the stem, and what depth in the ground,—then to place the Guano as near them, and as much

around them as possible, without being in absolute contact. For instance, round an Apple-tree of ten years' standing, dig a trench, one or one and a half foot deep, at about the same distance from the stem that the branches extend; let this trench be about one foot wide; then put at the bottom one and a half inch depth of Guano, dig it well in, and incorporate it with the soil; then cover up carefully, and press the earth down. The effect of this application will unquestionably be felt for several years. I am rather inclined to attribute this shortening of the joints chiefly to the action of the soluble portions of the Guano; as the Pelargonium, the Orange, and many other plants which exhibited this appearance, had only been watered with its solution. But, in all applications to fruit trees, I recommend the Guano itself, as the insoluble portion contains the chief materials of the seed, to protect and cover which fruit is formed. Where young trees are to be manured, a little Guano, dug in at the surface around the tree, as well as in a trench, will be advantageous. The use of Guano for trees probably combines another advantage of inestimable value; this is, the destruction of the insect tribe which are buried in the earth, and emerge from thence with the warmth of spring. The coverings of these insects, when they first come out of the ground, are not hardened; and, in this tender state, the contact with a moderately strong solution destroys them. I have tried experiments on about eight or ten various caterpillars, and some other insects, and have invariably found a solution of Guano kill them quickly, except when in an advanced state; then it took a longer time and a stronger solution. Salt and oil-soap are both apt to be injurious to vegetation; but, by strewing Guano around the trees, and turning it in a little depth, the plant will be benefited, and the insects at the same time destroyed. My experiments on this subject, although perfectly convincing and satisfactory to myself, have, for want of time, not been conducted with that care and precision which should authorize me to lay them before the public with requisite confidence. My last experiment was with the destructive grub, *Melolontha*, so well known to subsist on the roots of grass, of which a friend kindly sent me a box. Six of these white grubs were placed in a saucer half full of water, in which a teaspoonful of African Guano had been put and well stirred. They immediately began to feel uneasy, and, in about two hours, the whole six were dead."—P. 19.

With regard to liquid Guano, to be used as a fertilizer, not more than one pound of the best Guano should be used to ten gallons of water, and then it may be applied to growing

crops the same as water; but we are among those who regret the vast expenditure in Guano, while a million a-year is wasted in London alone in the common sewers, both in solid and liquid manure, of the richest, best, and most efficacious of all land dressings. But, upon the subject of Guano, we have already said the ordinary dressing for an acre should be from two-and-a-half to three hundred weight per acre, and the same proportion for garden crops; and if prepared in the way recommended in the paragraph quoted from *Gardening for the Million*, it can be best put on by sowing.



(Half-size).

SILENE SCHAFTA.

(Gmelin.)

SCHAFT'S CATCH-FLY.

THIS is a very pretty little hardy perennial herbaceous plant, exceedingly well adapted for planting on rock-work, or for growing in pots, with a collection of Alpine plants. It is quite of a prostrate character, producing many slender, spreading, downy stems: the leaves are rather small, opposite, and without stalks, of an oblong oval figure; and the rosy flowers, which are more than an inch in length, are produced four or five together, at the ends of the little shoots. It is somewhat singular that the terminal flower, or that at the extremity of the shoot, should open before the others on the same shoot, which expand in succession from the extremity inwards. A similar mode of development exists in some other plants, and seems to be analogous to the centripetal development of some forms of compound inflorescence.

The plant does not grow more than six inches or so in height, the little prostrate stems forming compact tufts, above which the flowers are elevated, and are thus seen to advantage. The flowers are nearly an inch

across, and consist of five oboe-shaped segments, enclosed at the base within a tubular calyx upwards of an inch long; they are of a pretty bright rosy purple colour, and are produced from the end of June to October.

Its compact and procumbent habit, and its profuse and continued blooming, render it peculiarly well adapted for planting in artificial rockeries, especially if the position is comparatively steep, down the rugged parts of which its slender branches would gracefully decline. For bedding out it is also well suited; but in this case the plants, when put out, should be surrounded by three or four largish blocks of stone, or vitrified brick, over which the branches will spread more readily than on the ground. This will be understood when it is remembered that its native habitat is among rocks.

It is by no means difficult of cultivation, for it grows freely in any rich soil, and propagates freely from seeds; being a perennial, however, the young plants raised from seed do not flower before the second year. It may also be multiplied by cuttings.

The plant is growing in the garden of the Horticultural Society, and was exhibited at one of their meetings in Regent-street during the autumn of the past year, when we had an opportunity of admiring its interesting appearance. It had been received from Dr. Fischer, a Russian botanist, and is found inhabiting rocks on Mount Keridach, in the Russian province of Talysch.

The *Silenes*, of which there are several interesting kinds in cultivation, form a very distinct group of plants belonging to the natural order Caryophyllaceæ, which also includes the Sweet William, garden Pink, and many other favourite flowers.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

GRASS VERGES TO GRAVEL WALKS. —

Whoever has noticed the difference in appearance between a smooth and level turf edge by the side of a gravel walk—whether it be simply a verge of a foot or two in width, or the margin of a broad surface of lawn—and an edging of a similar kind, but which is rugged, and, with elevations and depressions, not following any general disposition of the whole surface, but rugged and uneven in themselves, must have been struck with the infinitely superior appearance of the former. Of course this refers to a highly-kept pleasure ground, and not to that part of a garden which is becoming fashionable, and is characterized as “the wilderness,” where, in fact, the ruggedness of wild nature is imitated—often exaggerated. The disposition of the surface, in a

highly-dressed pleasure ground, varies according to circumstances, from perfect levelness, to gentle or sometimes even bold undulations: where gravel walks pass along, they ought by all means to follow evenly this characteristic disposition, undulating or otherwise, just as the general surface may or may not have this character at the parts along which they pass, but never should the railroad imitations of “embankments” and “deep cuttings” be resorted to, to bring them near to a level. Whatever the disposition of the gravel walk, and the ground through which it passes, in this respect the edge of the turf should be made exactly to correspond, and every means should be used to keep it in this state, by, at least annually, adjusting it with proper wooden beaters, and avoiding whatever would disarrange it, such as stepping directly on the edge, or passing the wheelbarrow or roller over it, without first placing something to protect it from injury. In mowing, too, the evenness of the edges is liable to be disarranged by cutting too closely in some places; every care should be taken to avoid doing so. But there is another point connected with edgings which is as often neglected, and which is of very great importance in producing a pleasing effect. Let those who have never noticed these things observe the difference between a shallow edging, not more than an inch above the gravel, and a deep raw-looking edge, standing up two, three, or four inches from the gravel; and if they have what is called a “cultivated” eye, they would never tolerate a deep edge in any position where they had any control, nor omit to attack them wherever they might have any influence. The edging-iron ought to be banished from among the gardener’s implements, for to their use must the majority of the deep raw-looking edges alluded to, be referred. By the constant and careful use of the grass-shears upon shallow edges, the grass will form a highly-finished slope to the gravel, and not a particle of raw earth will be exposed to view.

Where these evils exist, proper remedies should be applied; the edgings of turf should first be levelled—at least made perfectly even, smooth, and regular, following the undulations of the ground. If the edges admit of it, they may be beaten down or lowered to meet the gravel, but if they are so high as would render this impracticable, the gravel must be raised and adapted to them when they have been made even. One inch is quite sufficient for them to be above the gravel, and the gravel in the centre of the walk should hardly be elevated above the edges; a rounded walk is very uncomfortable to walk on, as well as offensive to the eye; and if they are well made, with a very slight convexity, they will be quite as dry as though they were much more convex.

Of course, when this highly-finished character is given to walks and edgings, they must not be neglected or spoiled afterwards by inattention: both the *gravel* and the *edges* of the turf must be *kept even*, or it will be of no use to make them so. The gravel must be frequently rolled when moistened by a shower; and if carefully and lightly swept, and not wantonly torn up, there will be little trouble in keeping that as it should be. The turf must be very evenly mown, and mown close down too; and the edge must be cut quite straight and even by the shears every time the grass is mown, and the oftener this is done the better the effect, and the lighter the labour.—*M.*

BLIGHTS (so called) are of various descriptions, but that which is most fatal is the wind. Drying winds completely deprive, by rapid evaporation, all the tender leaves and flowers of their juices faster than they can be supplied. This is the great evil from which plants in general suffer. Even in a frost, the portions exposed to a drying east wind are blighted; even the most hardy plants suffer. The common Laurel, the Rhododendron, and Aucuba japonica, will show by the brown edges of their young leaves how mischievous is a dry easterly wind. It is affirmed by some experienced men, that if it were possible, in these cases, to supply moisture externally by syringing, the consequences of drying winds might be averted. But a thousand minor things reveal to us the blighting effects of too rapid an evaporation. Cuttings in the open ground, exposed to the winds, flag directly; cover them close with a glass, and they will not flag at all. Nosegays under a glass, in a dish of water, will last a long while in a room, whereas without covering they are soon dead; drying winds are, therefore, often as fatal to beauty, if not to life, as a frost.

MARKING OF THE PANSY.—Few people, when they obtain a showy Pansy, pay sufficient attention to a very important point which is absolutely necessary to a good flower—the eye being entirely surrounded by the yellow or white; for if the rays or streaks break through to the border colour it is a decided fault—a fault scarcely to be overlooked. On this account small centres are rarely good, not because the proportions of colour are objectionable, but because in nineteen of every twenty cases the rays of the eye reach the border. In an Auricula, the divisions are all circles, and proportions can be laid down very accurately, so that any material deviation is a fault in itself; but the Pansy, though it should be circular outside, has nothing else circular about it. The flower must be uniform; that is, the two upper petals should be alike. The two side petals should be alike, and the bottom one may be any thing, so that the inside of it,

or the centre colour, must be the same shade as the inside or centre colour of the side petals. But it is much better that the Pansy should have a large centre than a small one; and as great changes can be made by the diversity of colour, or the disposition of it, in three distinct kinds of petals, it would have been unwise to have confined any of the properties so as to preclude a single variety that was in itself rich and beautiful. But there is a sound reason for insisting that the white or yellow shall be distinct and unbroken where it meets the border colour; and it is necessary to give this explanation to those who feel somewhat annoyed when a showy flower is condemned without their knowing, or even thinking, of the very important defect which condemns it. The Pansy consists of three very distinct classes of flowers, independent of colours: selfs, which are white, yellow, straw colour, or the various blues, browns, and purples; bordered flowers, which have white or yellow round the petals, and colour at the edges; and those flowers which have self-coloured top petals, and the three under ones bordered. These are very distinct, but selfs ought to have but one colour outside the yellow tube or centre, and those which are cloudy are comparatively worthless. Many of the selfs, and especially dark ones, have a lighter shade round the centre; some have a bluish cast, and some cloudy; but all these are great faults, and when they are shown against others free from it, they must fail in the hands of good judges. We have been requested to state our opinion as to the comparative merit of flowers not circular; and we at once say, that one which is wider from side to side than from top to bottom is the better of two faulty ones; in other words, breadth is far better than length. We hope we have been explicit, though, perhaps, a little prolix.

THE PROPERTIES OF FLOWERS.—These have unquestionably been settled in a manner not likely to be altered, but the figures by no means answer the perfection laid down in the letter-press. So far as this goes, then, we have to hope for improvement. It is not the author's, but it is the artist's fault; and nothing is more difficult than to get an artist to keep his own taste in subjection: we like the picturesque in landscape, but in giving a diagram for a model of perfection, the artist's horror of stiffness induces him to fly off from plain circles and flats. They might, however, contrive this, by placing the stiff model in any position which would exhibit the proper shape and no other:—but no, he must have some of the petals curled or twisted in, hanging down, or turning over, to show his power of foreshortening his task in grouping. Even those who read the properties of flowers, as published

in all former works, will find that the diagram but ill represents the figure described by the writer.

ELECTRO CULTURE.—Some years ago the *Gardener's Gazette* contained the particulars of some experiments in the application of galvanism to the culture of wheat and other vegetable productions; the result was then said to be surprising, and subsequent experiments have confirmed some, and disappointed others, as to the supposed or real efficacy of that singular agent. We have never seen anything very authentic to shake our faith in the parties who originally stated the fact, that galvanism affected vegetation; and although the means at first employed appeared very trifling to be capable of affording such results, yet so much has to be learned as to the power of electricity, and the extent of its agency in the ordinary mode of cultivating plants, that we rather desired to learn more, than doubted what we had heard and read. An experiment carefully conducted in the gardens of the Royal Botanic Society, Regent's Park, has confirmed this much—it has proved that galvanic influence, applied by means of a complete battery upon a small scale, produces an extraordinary effect upon plants, and we have only to learn the quantity required, and the best means of producing it, to render it a valuable agent in the cultivation of the land.

NEW VEGETABLE; "RHAFLOWER."—Mr. A. Forsyth, the Earl of Shrewsbury's gardener, at Alton Towers, in Staffordshire, suggests the use of the flower-stalks of Rhubarb, as an excellent addition to our list of culinary vegetables. He says:—"We have been in the habit of eating the leaves of the Rhubarb plant for many years; and, seeing that the fruit stalks were counted as waste, I thought it very likely that they were the better part of the plant, and I now find that the pouches of unopened flowers bear the same relation to the leaves of Rhubarb, that Cauliflowers do to Cabbage leaves, and may be obtained in great abundance, and that at a time (April) when all kinds of vegetables are valuable. The pouches of flower-buds are of a beautiful colour, when dressed in the same manner that Rhubarb is dressed, and resemble the inside of a fig; the flavour is milder than that of Rhubarb stalks, but I do not look upon it so much in the light of an article for making tarts of, as I do for its use as a boiled vegetable, to be used like Broccoli. Let no one take my opinion of this matter, but let every one judge for himself, as soon as the flower-stems show themselves. As a matter of course, the plants should be grown in rich ground, and the pouches to be crisp should be got very young, and will require some care in cooking.

RAISING NEW PEARS.—The mode pursued by Dr. Van Mons, the raiser of many excellent Flemish Pears, was to sow the seeds of garden varieties in the first instance: the fruit of this generation was generally very inferior; but seeds from it were sown for a second generation, and so on: amongst the seedlings of the fourth and fifth generations, in a direct line, many excellent varieties were found. In this country thousands of seedlings have been raised from the finest varieties, and proving inferior, on fruiting, have been in disappointment thrown away, after years of nursing; whereas, it appears the seeds of this *degeneration*, as it may be termed, ought to have been sown as above mentioned. Dubamel had been in the habit of sowing seeds of the finest table Pears in France for fifty years, without ever having produced a good variety: because his seedlings were bad, he had never dreamed of sowing *their* seeds, otherwise, with half a century of perseverance, he might have been as successful as was the indefatigable Van Mons.—*D.*

HOLLYHOCKS FOR SHOW.—It has been often questioned how these flowers can be shown so as to be seen to the greatest advantage; and, after a good deal of consideration, the conclusion to which we have come is, that five full-blown flowers should be exhibited at that part of the stem which shows the best, taking off all above and all beneath them. The considerations are these: If the whole spike were shown, the tops would soon droop, and totally spoil the effect; and if single blooms are exhibited, like Dahlias, the stems, or rather the foot-stalks, are not long enough, nor sufficiently flexible, to allow of the flowers being placed to advantage; besides which, one of the best properties of the plant is a close spike of flowers, and the single blooms do not show whether they have been close or a foot apart on the stem, so that one test of the flower, the way in which the blooms are seated on the spike, would be quite lost. Now, by leaving five full blooms on the stem, and cutting off the stem above them, each variety would form rather a showy bunch, and the closeness of the flowers would be tested as well as their individual quality. This, therefore, is our recommendation, and it is in accordance with the opinion of one good authority, who has already recommended the same course. Since Mr. Baron's varieties have been seen, people are taking some pains with these flowers; and, shown as we recommend, they form a very pretty feature in any floral exhibition.

STANDS FOR PANSIES.—So various are the stands for Pansies, that there seems a general sort of objection on the part of showmen, on the ground that the stands and boxes are known, and may be distinguished by judges,

so as to do away with that thorough independence which so much pains is taken to establish in other flowers. If the bas-matting tie is left on a Pink, or the label left in an Auricula pot, or a seedling that is known to be in one person's hands only, is placed in a Dahlia-stand, each would be considered a disqualification. But Pansies are shown in boxes, of all forms and colours, and there is no question but they are as well known as the owners. Generally speaking, it is disadvantageous to some, and the reverse for others; but the necessity for uniform stands is obvious. Some exhibitors have a style about their boxes or stands which greatly sets off the flowers; while others, less adapted, form a drawback upon ever such good ones. The thing is bad in principle; and the uniformity now established in Dahlia-stands should be carried out with all other subjects. The mixture of good and bad and middling specimens is at all times puzzling enough to judges; the claims of many seem almost equal; and, therefore, the knowledge of which belongs to A, B, or C, is a dangerous knowledge. It settles things quickly, but not always rightly; for, instead of taking the trouble to weigh all the nice points against one another, some one who cannot help leaning towards his friend, sticks to his stand, and calls attention to anything in its favour, while the opposite points, which tell against the collection, are left to others, and these, perhaps, being in no mind for disputation, give way. Pansies were originally shown in boxes of wet sand; and these being supplied by the societies, were all alike; but this led to a good deal of trouble in arranging them at the show, which arrangement consumed a good deal of time, and led to delays incompatible with the regularity of the exhibitions. The same thing, then, should be done with these as has been done with the Dahlia-stands, and all the stands be made uniform.

PRUNING ROSE-TREES.—Roses delight in a rich soil, and should be manured once every year; in winter the manure should be applied in a solid, and in spring in a liquid state. The two chief objects to be attained in pruning, are, the formation of a handsome tree, and the obtaining an abundance of good flowers. To secure the first point, it is necessary to begin operating when the plant is quite young; a certain number of shoots, varying from three to seven, according to the strength of the plant, standing at nearly equal and the greatest distances apart, should be selected, and the remaining shoots cut clean out. Close pruning is suitable for the small-growing varieties, but not for the stronger ones: moderately elose pruning produces the finest flowers. The spring is to be preferred for pruning, because there is then no risk of the frost injuring the

shoots which are left, which is the case with all the tenderer varieties if they are pruned in autumn.—*M.*

TREES OF A PENDENT HABIT.—These are rarely seen in that quantity which their various manners of growth and generally elegant outlines would appear to render desirable. Very few indeed are seen, but the weeping willow, and weeping ash, although many others might be collected, that would form interesting additions to shrubberies and park scenery; for instance, other species and varieties of those last-named, also of the lime, beech, birch, poplar, larch, and other forest trees; whilst among woody plants of smaller growth, a great variety exists, whose several habits may be well-displayed on congenial stocks, of heights regulated by their size and the situations they are intended for. This last point has not been attended to, in the majority of instances, as we seldom see a weeping ash with a stem sufficiently long to properly support its branches, and consequently it too frequently assumes a low squab shape, very detrimental to its general effect; and such would doubtless be the case with the weeping willow also, but that the youngest branches only assume a pendent habit, the tree naturally growing to a considerable height. But this is the case with only a few plants of this class, most of them being like the ash, and requiring a stock properly proportioned to their mature growth. Roses of long and slender habits have thus been introduced with excellent effect in garden scenery; and the list of pendent plants may be much increased in number, by keeping this point in view, and adapting proper stocks to numbers of the training shrubs, as various *Genistas*, *Cytisus purpureus*, and others; *Caragana pygmaea*, *Calophaca mongolica*, *Cotoneaster micropophylla*, *Cerasus semperflorens*, *Daphne Cneorum*, and many others. Again, the number of plants suited for this method of training may be increased by many of the climbing sorts, as honeysuckles, the Chinese and American *Wistarias*, and others, by training them up to single stems to a proper height, and then allowing them to form a head. It is not intended to recommend an indiscriminate introduction of plants of these habits, but they might certainly be introduced in greater numbers, and with good effect, especially in small and suburban gardens, where the smaller varieties, from their compactness of growth, variety in flowering, and general difference of outline, would allow of a considerable number of species of hard-wooded plants being introduced in a very limited space. In some establishments these points have been partially attended to, but certainly not to that extent which might be expected, few dealers having many varieties on sale.



AQUARIUMS AND AQUATIC PLANTS.

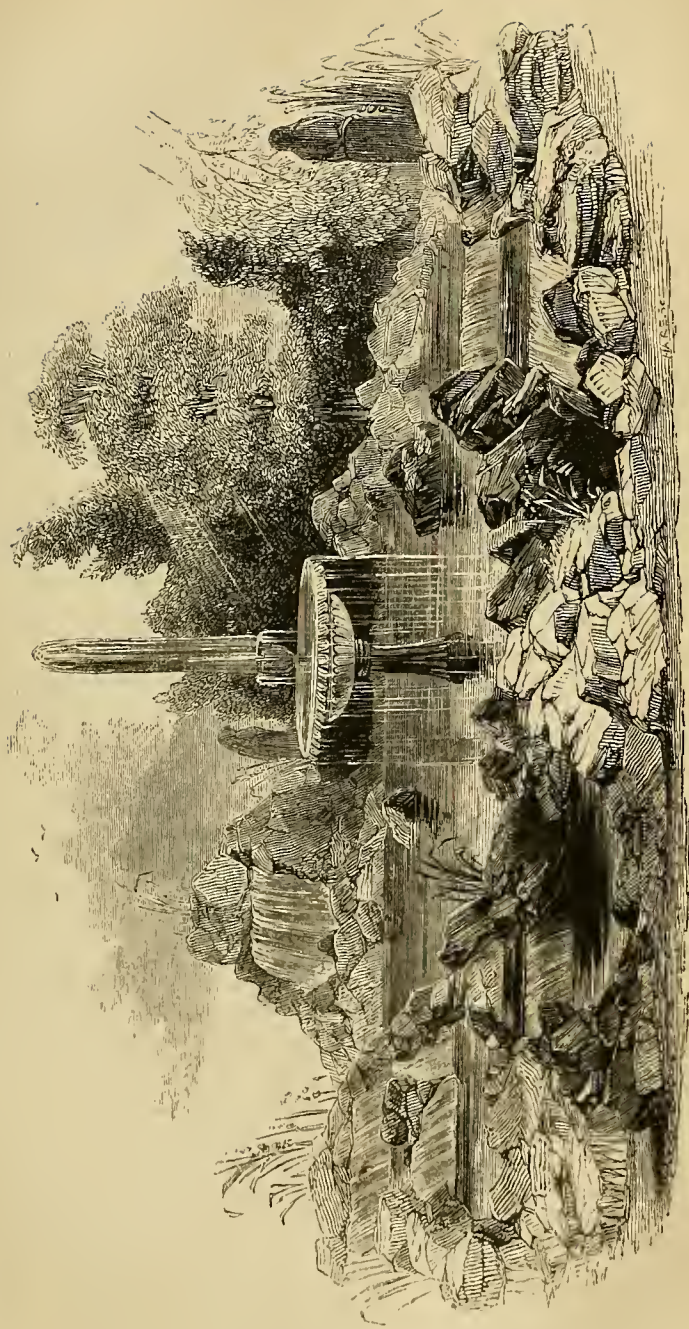
It has been generally considered that water should accompany rock-work; and, although it is by no means necessary, water, well displayed, is always so acceptable in scenery of any kind, that we rather seek an excuse for the introduction of that feature than for a moment admit there is any deficiency in good rock-work, even when there is no water; for it is frequently met with in natural scenery far inland and on mountains, and that too in its most picturesque form, and most inhabited with plants. But, reversing the order of things, we admit at once, that however beautiful water may be, a judicious accompaniment of rock-work is always an improvement. Aquatic plants may always be introduced with good effect in ordinary ponds; and, generally, these, being made shallow at the edges, and deeper towards the middle, afford the greatest facilities for the cultivation of dwarf or other plants, for some of the dwarfs would not succeed if planted at the bottom of a deep pond, although many water plants have the power of adapting themselves to their stations. In a general way, the dwarf plants, that is to say, they which grow only in shallow water, are, for the most part, insignificant in size, and seem to require that they should be near the edges to be seen at all; but, in forming ponds expressly for the growth of plants, much may be done towards accommodating the most tender and delicate productions without spoiling the effect for more robust subjects. In most cases where water has to be introduced,

the bottom of the pond must be impervious to wet, and therefore all the soil that is necessary for plants to grow in must be supplied either in pots or on the bottom; but it is the safest mode of proceeding, in all cases, to let the choice plants have all they require, in pots or tubs, at the time of planting or sowing. The first step to be taken in the formation of an aquarium is to lay down the plan. This greatly depends on the capacity of the place, the supply of water, the nature of the ground, the surrounding scenery, and other local circumstances. If there be water already on the premises, you have first to see if it cannot be appropriated, by an alteration of its outline, to prevent stiffness and formality; because, if it can be rendered picturesque, as it frequently can, by merely altering the outline, which is a simple operation at any time, great expense is avoided. In a pond of small size the whole might be appropriated; but large pieces of water, or long canals, are unmanageable, unless under peculiar circumstances. For instance, in a very large piece of water, shallow at the edge, it would be no very great difficulty to cut off a portion by filling in a bank of clay and stones, in such a direction as would give you all the water you wanted, and make the rock-work a bit of handsome scenery on the bank, which should be wide enough to have a walk on it, as well as the rock-work; but if the pond or piece of water be deep, this would be an expensive undertaking. In such case, the aquarium may be made in the best situa-

tion you can find for effect, due regard being had for the conveyance of the water in pipes, and to the level of the water to be thus supplied. In the construction of ponds there are many different modes of keeping in the water. The most objectionable and expensive is lead, yet it is very commonly used in limited structures. The nature of the ground must, in some measure, determine. If it be open and porous, nothing will be more durable than puddling, which is nothing more nor less than lining it with very stiff clay, and of a good thickness; for if it be not thick, it will give way, and the water will all escape. Supposing it to be, as we have said, porous, dig it out three feet six inches deep in the middle, and gradually becoming shallower as it approaches the edge, which should be eighteen inches deep; stiff clay, as it is dug, moist but not wet, should be thrown in, in sufficient quantity to make a good thick stratum all over the bottom. This has to be rammed down with wooden rammers, made with straight round pieces of timber, as thick as four inches through, rather rounded at the bottom, and cut so as to handle well at the upper end; and several hands ought to be employed at this ramming, occasionally wetting it when it is not sufficiently moist, and keeping a pail of water to dip the rammer in to prevent it sticking. In this way you cover the bottom with well-wrought malleable clay. Continue adding to this and ramming it in, until you have covered the bottom a foot thick all over, which will make the middle two feet six inches deep, and the edge come off to nothing; for the clay must be brought up to the edge of the intended water, the level of which must be preserved by a drain close to the top, or a pipe through which superfluous water may run off. It is almost impossible to work the clay too much by the ramming process; for if the pores be not closed well the water will find its way through. As soon as it has been rammed sufficiently, and smoothed pretty well, it may be left to dry; and if the clay be worked enough, it will dry without cracking. If, however, there should be a disposition to crack, which will be seen before it has dried much, it will be necessary to ram it still more all over; and the second time you must trust it only a day or two, and before it has shrunk, let in the water. If you have a good supply, and it comes from any height, you may add a fountain to your other ornaments, or let it come trickling down the rocks, or use any other graceful and natural means of admitting it; and if it has to come from a dead level, or near it, it will be better to admit it unseen, because no advantage is gained by seeing how it is supplied. On the bottom of this pond may be cast about as much soil as would cover

it nearly three inches at the bottom, and gradually lessen as it comes to the edge; this soil should be gravel and peat, equal parts, and good loam, equal to both. This affords something for the roots of plants to take hold of when they escape from the pots, or balls of earth, or baskets, in which they are first planted or sown. With regard to the management of the plants, little is required beyond a good choice, properly introduced. Some will have to be sown in pots, and the pots sunk; others only want their seed thrown in the pond, and will find their way to the bottom, and there vegetate; but each of the plants must be treated according to its nature. If the pond is made of very small dimensions, it will not do to form the bottom smooth; a portion of the middle must be flat, and the depth of two feet; round this there must be a ledge six inches shallower, and round that another, forming something like stairs at the bottom, because in a smaller pond the form would otherwise be that of a deep basin, and the soil would wash down to the centre, and leave the sides little else than the bare clay: by making flat shelves one above another this will be prevented. In ponds of small size, it will be found better to brick and cement the bottom and sides, but the form may be preserved much the same as the clay bottom, and if the bricks be well laid in cement, the bottom will be very durable; the soil should be laid in for the plants just the same, and they will not require different treatment. There should be a walk round the pond. On the side next the rockery there should be a good twelve inches between the edge of the path and the bottom of the rocks. In this border, which may be peat, and sunk below the path, bog plants may grow; and between the inner edge of the path and the water there may be a verge of plants, of the most dwarf and interesting kind, adapted for such damp situations. If the aquarium be formed by taking a piece off a larger space of water, you, as it were, enclose it by the rock-work on the water side; and it would add greatly to the effect if there be an opening in the rocks, not quite to the top, but the rocks forming a kind of natural arch, under which the larger expanse of water may be seen. In this case, it will be necessary to form a break in the path, over which a gothic bridge, or something fanciful, must be thrown to connect the walk, or you would have to return, instead of going quite round. These aquariums, when aided by being judiciously adapted to the situation, and well furnished with rock-plants, are very pretty features in all gardens, and especially where the supply of water enables us to render even that subservient to a fanciful arrangement for its admission.

The sketch of the fountain, cascades, and



AQUARIUM AND ROCK-WORK, IN THE GARDENS OF E. HARFORD, ESQ.
Designed and executed by FREEMAN ROE, of the Strand, London.



rock-work, erected or constructed at Mr. Harford's, is the portrait of a clever bit of fancy by Mr. Roe, who has given much of his time to the consideration of hydraulics, as connected with garden scenery. It is executed on a small scale, and cost under a hundred pounds, though from our engraving it would almost seem to comprise a large space. It is, however, peculiarly adapted for an aquarium and rock plants. There may be some extravagance in the design, but it is, nevertheless, a fair specimen of what could be done towards enhancing the beauty of a garden. It is a pity so many places possessing every capacity for magnificent water scenery, and fountains in particular, should be suffered to exist without either, and that some of the most wealthy lords of the most extensive estates can hardly boast of a single bit of scenery worthy of the domain, or of the mansion, or of the owners and occupiers. Let us hope this taste is improving, and that the facilities now afforded by the means of supplying water may change the face of some of the dullest and most melancholy of all the gentlemen's seats in the country, and give them an appearance of life and animation. It is on this ground that we recommend aquariums and rock-work, fountains and cascades; and this sketch of all such subjects on a small scale will give a very good idea of what could be done where there are ample means, and the facilities of water-power on the spot.

CULTURE OF HARDY AQUATICS.

THE culture of hardy aquatics, or water plants, is perhaps one of the simplest matters in the whole range of flower-gardening; and when one or two principles are kept in view, it can hardly fail of being done successfully. The two principal of these are, to provide the roots with a portion of soil to grow in, and to place them at a depth beneath the surface of the water proportionate to the size and particular habit of the individual plants. The natural habits of the species should also be imitated; thus, those that grow up with long floating stems from the bottom of deep water, should be placed in the deepest parts of the artificial lake or rivulet, while the smaller kinds, and those which naturally grow *on the margin*, rather than in the midst of a piece of water, should have this borne in mind at the time of assigning them their position.

For large pieces of water, a few only of the stronger kinds should be chosen, and these being appropriate in themselves from their noble appearance, will produce a better effect by far, than the introduction of a more extensive but less discriminate selection. Among those which may be referred to as

being peculiarly suited to such situations, are the *Nymphæa alba*, *Nuphar lutea*, *Villarsia nymphoides*, *Iris pseud-acorus*, *Typha latifolia*, *Rumex Hydrolapathum*, *Alisma Plantago*, and some few others, according to taste. Where there are any projecting points of the bank, (especially if these are in any way connected with trees and shrubs on the adjoining ground,) such situations should be selected for the introduction of the upright growing water-plants, in groups of as great a number and as much variety of foliage and habit, as the connecting shrubs and ground may justify. Most of the upright growing kinds require to be kept near the edge, where the water is shallow; and it may be desirable to introduce some of these occasionally in situations where there is no foliage on the banks, to serve as connecting links between the water-plants and those on land; and when such is the case, they ought always to be placed in groups of three or four near together, and these not at regular distances, but disposed with an air of graceful negligence.

In the case of smaller ponds, pools, and basins of water, where the space will of course be more contracted, it will be equally desirable to attend to the proper arrangement of the plants with respect to their depth in the water. In these cases, the margin of the water is usually regular, and therefore there is not the same scope for the display of artistical arrangement in planting; but the principle of grouping, in contradistinction to that of dotting the plants at regular set intervals, ought still to be upheld. Where the sides of the pond consist of banks of earth, cut the face of the sloping part into three or four steps, as formerly recommended, and on these steps the plants can be ranged at pleasure. In the case of still smaller basins or tanks, when the edge is of brick or stone, and the arrangement of steps has been omitted, the same end may be gained by means of bent iron hooks, of various lengths, fixed into the masonry, one end of which should form a loop into which the pot may be dropped and secured, and, by having these hooks of various lengths, the plants may be deposited at any desired depth.

In planting, it will be sufficient, in the case of those placed in the deep water of the larger areas referred to, to envelope their roots at the time of planting in a ball of strongish loam-earth, principally for the purpose of adding sufficient weight to the plant to keep the root at the bottom; the leaves will in due time make their way to the surface, and the plants will grow freely enough in the mud at the bottom. Those which are placed nearer the edge may be fixed in the mud either by the same process, or by making a

hole, and planting them in the more usual way. For smaller pieces of water, the plants had better be all in pots, and the pots sunk to the bottom, for this acts slightly as a check on the very free-growing kinds, and prevents them from appropriating too great a portion of the area devoted to them, and it also affords a more ready means of removing altogether or re-arranging the position of any of the plants.

The only other point of general attention which it seems necessary to refer to, is that of keeping the vigorous growing kinds from appropriating to themselves too much of the entire area, to the injury of the smaller and more delicate species, which latter are often the most beautiful. The entire area should not be allowed to become covered entirely with plants at any time; a very great portion of the effect produced by water-plants being referrible to the contrast between the ample opaque surface of leaves and the limpid transparent surface of the water, as well as the reflection—as in a mirror—of the stems of the taller kinds. When it becomes necessary to thin them, nothing more is required than to cut away and remove the stems, and roots also, if requisite, with a long hook; if this is properly done, the portions which are left will not be injured.

In the annexed list of hardy aquatic plants, or such as may be grown out of doors, a great variety of bog plants, such as might be appropriately introduced in wet places near the margin of pieces of water, have been necessarily omitted, on account of its length; and the notice of many others is made as brief as possible for the same reason. There will be found, however, ample materials for a selection; and no one would require to grow even half of those named.

LIST OF HARDY AQUATICS.

Acorus Calamus, (sweet Flag,) is a perennial, of reed-like habit, growing two feet high, and remarkable more for its aromatic properties than for its flowers. It has a strong aromatic smell, and a warm pungent bitterish taste; the root powdered might supply the place of foreign spices: it was formerly used to strew the floors of houses. It belongs to the natural order Orentiaceæ.

Actinocarpus Damasonium, (common Actinocarpus,) is a pretty perennial plant, growing six or eight inches high; the leaves grow erect, and are cordate-oblong; the flowers are white, produced in loose whorls, on an upright stem, from June to August. It is a native plant, found in ditches. It is called also *Alisma Damasonia*; and belongs to the natural order Alismaceæ.

Aldrovanda vesiculosa, (vesiculate Aldrovanda.)—This is a curious little perennial

plant, growing a few inches high, and produces white flowers from June to August. Native of Italy. It belongs to the natural order Droseraceæ.



Alisma natans.

Alisma. (Water-plantain.)—There are several species. *A. Plantago*, (greater,) has acute ovate leaves, and white flowers, tinged with purple; produced in June or July: grows a foot and a half high; native of Britain, growing in pools. *A. lanceolata*, (spear-leaved,) grows about the same size, and is found in similar places; the leaves are lance-shaped, and the flowers white, tinged with purple, blooming in June and July. *A. ranunculoides*, (ranunculus-like,) is also a native plant, of much smaller growth, with narrow leaves, and purple flowers, produced in August. *A. natans* (floating,) and *A. repens*, (creeping,) are Welsh plants, the former with handsome large white flowers, the latter with flowers tinged with purple; they grow only a few inches high, and bloom in July and August. *A. trivialis*, (trivial,) and *A. parviflora*, (small-flowered,) grow from a foot to a foot and a half high, and bear white flowers from June to August; they are from North America. *A. parnassifolia*, (Parnassus-leaved,) is from Italy, and requires slight protection; it has white flowers in June and July. They are upright growing perennial plants, with the flowers in loose whorls, more or less branched. They belong to the natural order Alismaceæ.

Aponogeton distachyon, (two-spiked Aponogeton,) is usually recorded in books as a green-house plant; it has been, however, proved to be quite hardy at so many different places, that we should not be justified in omitting it from this list. In one place it was continually in flower out of doors, summer and winter, except for a week or two at Midsummer. It has linear-oblong floating leaves, grows six inches high, and bears a two-forked spike of white flowers, from May to July: it is a perennial, and a native of the Cape. It belongs to the natural order Juncaginaceæ.

Butomus umbellatus, (umbelled Flowering-rush.)—This is one of the handsomest of

our native aquatic plants. Gerarde says, "the grassie rush is of all others the fairest and most pleasant to behold, and serveth very



Butomus umbellatus.

well for the decking and trimming up of houses, because of the beautie and braverie thereof." It grows upright, two feet high, with long sharp-edged leaves, and umbels of flowers of different shades of red, produced at the top of the long stalks. It blooms in June and July, and is a perennial plant. *B. latifolia*, (broad-leaved,) also a perennial; is from Nepal, and grows about a foot high, producing white flowers in June and July. They belong to the natural order Butomaceæ.

Calla palustris, (marsh Calla,) is a perennial, with cordate leaves, and spadices of inconspicuous flowers, growing six inches high. It is a native of North America, and belongs to the natural order Orontiaceæ.

Callitriche, (Water Starwort,) is a genus of native plants, which spread in the water in thick matted tufts, composed of slender stems, bearing small leaves, and inconspicuous flowers. There are three species—*verna*, (spring,) *autumnalis*, (autumnal,) and *pedunculatus*, (peduncled.) They may be useful to introduce in shallow water, as shelter for gold fish. They belong to the natural order Callitricheæ.

Caltha. (Marsh Marigold.)—These are showy perennial plants. *C. palustris*, (common,) grows erect about a foot high, with roundish cordate leaves, and yellow flowers in April and May; *flore-pleno*, with double yellow flowers, is a very ornamental variety; it is a native plant, found in marshy places: the flower-buds before they are expanded are said to be a good substitute for capers. *C. asarifolia*, (Asarum-leaved,) from Unilasch; *C. parnassifolia*, (Parnassus-leaved;) *C. flabellifolia*, (fan-leaved,) from North America; and *C. minor*, (smaller,) a native plant, have all yellow flowers, and, with the exception of *flabellifolia*, are of small stature. *C. nutans*, (floating,) from Siberia, has white flowers.

They belong to the natural order Ranunculaceæ.

Cardamine. (Ladies' Smock.)—Several of the species grow in wet boggy places, and are pretty when introduced by the margin of a piece of water. *C. pratensis*, (meadow Cuckoo flower,) and the double variety of it, are very pretty plants, growing a foot high, and bearing light purple flowers in April and May. *C. amara*, (bitter,) is a very much smaller plant, with white flowers: these are native perennial plants, and grow in wet places. *C. uliginosa*, (bog,) a small Taurian species, with white flowers, is also pretty; and so is *C. latifolia*, (broad-leaved,) which grows a foot and a half high, and has purple flowers from June to August: it is from Spain. *C. granulosa*, (granular,) *C. prorepens*, (creeping,) and *C. dentata*, (toothed,) are ornamental. They belong to the natural order Cruciferae.

Carex. (Sedge.)—These grow in boggy places; and some of the larger ones, of a reed-like habit, look well on the margin of a piece of water. *C. paniculata*, (panicked,) sometimes grows with a remarkable stem or root stock. There are a great many species, all perennials. They belong to the natural order Cyperaceæ.

Ceratophyllum. (Hornwort.)—There are two unornamental floating species; *C. demersum*, (demersed,) *C. submersum*, (submersed.) They belong to the natural order Ceratophyllaceæ.

Elatine hydropiper, (small Water pepper,) and another species, called *E. tripetala* (three-petalled,) the latter also called *hexandra*, are minute annual plants, found in lakes, pools, and ditches, in different parts of the United Kingdom. They belong to the natural order Elatineæ.

Eriocaulon. (Pipewort.)—*E. septangulare*, (seven-angled,) is a dwarf upright perennial, not showy, but curious. It is a native plant, found in wet boggy places. *E. decangulare*, (ten-angled,) grows three feet high, and is found in New Jersey. They belong to the natural order Eriocaulaceæ.

Grasses.—There are several aquatic grasses which may be introduced for the sake of variety. *Degraphis arundinacea*, (reed-like,) grows on river banks; there is a variety of this with striped leaves. *Phalaris aquatica*, (water Canary-grass,) is an annual, growing a foot and a half high. *Alopecurus geniculatus*, (jointed Foxtail-grass,) is a perennial, of floating habit. *Catabrosa aquatica*, (aquatic,) and *C. viridula*, (greenish,) floating perennials, rising a foot and a half high. *Phragmites communis*, (common reed,) a stately plant, growing six feet high and upwards. *Glyceria fluitans*, (floating,) and *G. plicata*, (plaited,) perennials, growing about a foot and a half high. *Hydrochloa aquatica*, (aquatic,)

and *H. arundinacea*, (reed-like,) perennials, attaining six feet in height. There are many others which grow in boggy situations, but they have little interest in cultivation. With the exception of the common reed, which is a plant of noble bearing, they are scarcely worth introducing to a collection. The grasses constitute the natural order Gramineæ.

Herpestis cuneifolia, (wedge-leaved Herpestis,) is a small plant, growing about six inches high, with wedge-shaped leaves, and blue flowers in August: native of North America. *H. portulacacea*, (porcelain-leaved,) *H. amplexicaulis*, (stem-clasping,) *H. rotundifolia*, (round-leaved,) *H. micrantha*, (small-flowered,) and *Brownii*, (Brown's,) are weedy plants, requiring slight protection. They belong to the natural order Scrophulariaceæ.

Heteranthera, is a genus of floating perennial plants, with inconspicuous flowers; *H. acuta*, (acute,) and *H. limosa*, (bog,) are North American plants. They belong to the natural order Pontederaceæ.

Hippuris vulgaris, (common Mare's-tail,) is a singular native plant, growing in ditches, and named Mare's-tail, from its crowded whorls of very slender linear-acute leaves. Its flowers are inconspicuous. By absorbing a great quantity of inflammable air, this plant is reputed to assist in purifying the putrid air of marshes: it is eaten by wild ducks. It belongs to the natural order Haloragaceæ.



Hottonia palustris.

Hottonia palustris, (marsh Water-violet,) is a beautiful perennial British plant, growing about a foot high: its finely cut leaves are all produced in clusters under water, and the upright spikes appear above the surface of the water, and have a very pretty appearance, with their whorls of pale, purplish, and yellowish-coloured flowers. It is found in ditches, and is one of the prettiest hardy aquatic plants. It belongs to the natural order Primulaceæ.

Hydrocharis morsus-ranae, (common Frog-bit,) is one of the most beautiful of our smaller native water-plants. It is a perennial plant, growing in still water, and increasing by runners; it grows a few inches only above the water on which it floats: the leaves are of a roundish heart-shape, and the flowers white, consisting of three petals, blooming in June and July. It belongs to the natural order Hydrocharideæ.



Lobelia Dortmanna.

Hydropeltis purpurea, (purple Hydropeltis,) is a slimy floating perennial plant, with peltate leaves, and has small reddish purple flowers in July and August: it is a native of North America. It belongs to the natural order Cabombaceæ.

Iris pseud-acorus, (yellowish Iris,) is a stately reedy-looking plant, growing three or four feet high, and producing very ornamental yellow flowers in June. It is a native perennial plant, found in moist places by the side of rivers and streams, and belongs to the natural order Iridaceæ.

Littorella lacustris, (plantain-leaved Shoreweed,) is a minute, delicate, native plant, growing on the margin of lakes, with oval-shaped leaves and white flowers, with long, tremulous stamens; it is a perennial, and flowers in the summer months. It belongs to the natural order Plantaginaceæ.

Lobelia Dortmanna, (water Lobelia,) is a perennial, with linear leaves, and an upright stem, a foot and a half high, bearing loose spikes of blue flowers in July and August. It is a native plant found in lakes, and is very ornamental. This belongs to the natural order Lobeliaceæ.

Lysimachia thyrsiflora, (thyrses-flowered Loose-strife,) bears yellow flowers from May to July, and grows about a foot and a half high: it is found in boggy places. Another species, *L. vulgaris*, (common Loose strife,) grows in damp places, and has yellow flowers.

They belong to the natural order Primulaceæ.



Lythrum Salicaria.

Lythrum Salicaria. (Common Lythrum.)—Though not strictly aquatic, yet being found on river banks, and being a plant of great beauty, it should never be omitted on the banks of a piece of water. It grows erect, four feet high, in favourable situations, and has cordate-lanceolate leaves, and long whorled spikes of purple flowers. It is a native plant, and belongs to the natural order Lythraceæ.



Menyanthes trifoliata.

Menyanthes. There are two hardy species. *M. trifoliata*, (three-leaved Buckbean,) is a perennial, with stems prostrate and rooting at the base, the upper part growing erect to about a foot in height. It has ternate (divided into three) leaves, and upright spikes, with whorls of pale-coloured or whitish flowers. It is a very ornamental plant, flowering in July. Native of Britain, where it is found in small rivulets and in moist places. In Sweden, this plant is said to be used as a substitute for hops; and the roots are powdered and eaten in Lapland. *M. americana*, (American Buckbean,) is a perennial, growing a foot high,

and bearing white flowers in July: native of North America. These plants belong to the natural order Gentianaceæ.

Myosotis. These are pretty plants. *M. palustris*, (marsh Scorpion-grass,) is really a beautiful perennial plant, found in wet places in many parts of the country; it grows about a foot high, producing numerous corymbs of pretty blue and yellow flowers, known as the "Forget-me-not:" they are produced all through the summer. *M. cæspitosa*, (tufted Scorpion-grass,) is a similar plant to the last, but rather smaller, and the flowers are hardly so showy. It flowers in June and July, and is met with in wet places in various parts of the country: there is a variety of the latter called *macrocalyx*. Natural order Boraginaceæ.

Myriophyllum. (Water Milfoil.)—There are two native species, rather pretty perennial plants. *M. spicatum*, (spiked,) has spiked whorls of red flowers in July and August. *M. verticillatum*, (verticillate,) has green flowers in axillary whorls. The leaves of both are pinnated and capillary. They belong to the natural order Haloragaceæ.

Nuphar.—These plants are all perennials, and are nearly allied to Nymphæa. *N. lutea*, (common yellow,) is a native plant growing in pools: it has cordate leaves and yellow flowers, in June and July: the roots rubbed or bruised with milk, destroy crickets and cockroaches. *N. Kalbiana*, (Kalm's,) has yellow flowers in July and August: the leaves are cordate a little out of the water: native of Canada. *N. sagittifolia*, (arrow-leaved,) has arrow-shaped leaves and yellow flowers, which open from June to September: native of North America. *N. pumila*, (dwarf yellow,) a Scotch plant, found there in lakes, has oblong cordate leaves, and yellow flowers in July and August. *N. advena*, (stranger,) has cordate, half erect leaves, and yellow flowers in July and August: native of North America. These plants belong to the natural order Nymphæaceæ.

Nymphæa. (Water-lily.)—The hardy species which are floating plants with ample leaves, are very beautiful aquatics. The common white water-lily is, perhaps, unequalled. *N. alba*, (white,) is a native plant found in rivers, with cordate leaves and large white flowers, produced in June and July. It is stated, that the flowers raise themselves out of the water, and expand about seven in the morning, and close again, reposing on the surface at four in the afternoon. There is a variety also with white flowers, called *canadensis*. *N. reniformis*, (kidney-leaved,) has reniform leaves, and produces white flowers through the summer; native of Carolina: requires slight protection. *N. odorata*, (sweet-scented,) has

cordate leaves and white flowers in July: native of North America. *N. minor*, (smaller,) has cordate leaves and white flowers in July: native of North America. *N. nitida*, (shining cup-flowered,) has cordate leaves and white flowers from June to September: native of Siberia. *N. pygmaea*, (pigmy,) flowers from May to September, and has cordate leaves and white flowers: native of China. The genus belongs to the natural order Nymphaeaceae.

Orontium.—Of this genus there are two species of little beauty, *O. aquaticum*, (aquatic,) from North America; and *O. japonicum*, (Japan,) from Japan. The Indians gather the seeds, and eat them when dried, like peas, boiling them repeatedly before they are fit for use. The latter plant is also called *Rohdea japonica*. They belong to the natural order Orontiaceae.

Polygonum.—Several of the species are aquatic, and they are mostly worth growing, either for their flowers or their habit. *P. amphibium*, (amphibious,) is a floating perennial plant, with oblong-lanceolate leaves, and spikes of pink flowers: a native plant, found in ditches and rivers. *P. coccineum*, (scarlet,) is a pretty perennial, with scarlet flowers, from June to August: from North America. *P. niloticum*, (Nile,) is inconspicuous. *P. mite*, (mild Water pepper,) is a native annual plant, bearing red flowers, from June to August. *P. salsugineum*, (briny,) has pretty pink flowers, from June to August, and is from the Caucasus. *P. senegalensis*, (Senegal,) is from Geneva, and has red flowers. *P. Hydropper*, (Water pepper,) is a native plant, and has red flowers. The native species become rather troublesome weeds in some places. They belong to the natural order Polygonaceae.

Pontedera.—There are three hardy Pontederas. *P. caerulea*, (blue-flowered,) is a perennial plant, growing erect, about two feet high, with cordate-lanceolate leaves, and crowded spikes of blue flowers, which are produced in August. It is a native of North America. *P. cordata*, (heart-leaved,) has heart-shaped leaves, grows two feet high, and bears blue flowers from June to August: native of North America. *P. angustifolia*, (narrow-leaved,) has long triangular leaves, and spikes of blue flowers, produced from June to August; it grows two feet high: also a native of North America. *P. lanceolata*, (lanceolate,) grows two feet high, and has lance-shaped leaves, and blue flowers in August: native of North America. The three last require slight protection. These plants belong to the natural order Pontederaceae.

Potamogeton. (Pond-weed.)—This is a family of weedy plants, all natives of lakes, rivulets, and ditches in the country. There

are about a dozen species, many of them possessing interesting foliage. They belong to the natural order Juncaginaceae.

Proserpinaca palustris, (marsh,) and *P. pectinata*, (pectinated,) are curious small annuals, with white flowers. They belong to the natural order Haloragaceae.

Ranunculus. (Crowfoot.)—There are several hardy perennial species, of more or less floating habit. *R. aquatilis*, (water,) has leaves of various kinds; those submersed are capillary and multifid, the others three-parted: this plant produces numerous white flowers, and clothes the pools and ditches, where it abounds, with a white mantle during the early part of summer: *pantoxis*, a plant, with the leaves all capillary, is a variety. *R. hederae*, (ivy-leaved,) *R. tripartitus*, (three-parted,) and *R. obtusiflorus*, (blunt-flowered,) with some varieties, are all of the same habit, and produce white flowers. *R. polyphyllus*, (many-leaved,) is an interesting annual, bearing yellow flowers in May and June, and growing nearly a foot high: it is a native of Hungary. These plants belong to the natural order Ranunculaceae.

Richardia aethiopica, (Ethiopian Richardia,) is a very handsome plant, usually grown in a green-house, but hardy enough to endure in water out of doors, if kept under water at a sufficient depth. It grows about a foot high, with erect arrow-shaped leaves, and handsome cucullate one-sided spathæ, which in green-houses are produced usually during the early part of the summer. It is a native of the Cape, and belongs to the natural order Araceae.

Rumex. (Dock.)—Though a weedy genus, and possessing no beauty in its flowers, there are one or two species that are useful for producing effect, in collections of water-plants, from their bearing fine broad conspicuous leaves. *R. Hydrolapathum*, (great Water-dock,) is a native plant, growing on river banks, with lance-shaped leaves, from one to two feet long. *R. aquaticus*, (grainless Water-dock,) has also large leaves of an oblong figure, and is a native plant, found in watery places. They belong to the natural order Polygonaceae.

Sagittaria. (Arrow-head.)—Some of them are pretty plants; they are all perennials. *S. sagittifolia*, (arrow-leaved,) is one of the handsomest of British plants; it grows two feet high, with arrow-shaped leaves and white flowers, from June to August: there is a double-flowered variety: it is found in rivers. *S. rigida*, (rigid,) has lanceolate leaves and white flowers in June and July: grows a foot-and-a-half high: native of North America. *S. latifolia*, (broad-leaved,) grows a foot high, and has arrow-shaped leaves and white flowers in July and August: native of North America:

of this there is also a double-flowered variety. *S. natans*, (floating,) and *S. falcata*, (falcate,) both Carolina species, have white flowers in July and August, and grow a foot high. The following require slight protection:—*S. Do-*



Sagittaria sagittifolia.

niana, (Don's,) has white flowers in July and August, and is a native of Nepal: *S. obtusa*, (obtuse,) *S. heterophylla*, (various-leaved,) *S. hastata*, (hastate,) and *S. graminea*, (grass-leaved,) all North American plants, and all having white flowers, blooming in July and August: they belong to the natural order Alismaceæ.

Saururus. (Lizard's Tail.)—These are herbaceous perennials, with neat foliage, but no beauty in their flowers. *S. cernuus*, (drooping,) grows two feet high, and has heart-shaped leaves. *S. lucidus*, (shining,) grows a foot and a half, and has deeply cordate-ovate leaves. Both these are North American plants. *S. chinensis*, (Chinese,) requires a frame, and has also cordate-ovate leaves. These plants belong to the natural order Saururaceæ.

Sparganium. (Bur-reed.)—There are four species, perennials, natives of Britain. *S. ramosum*, (branched,) grows two feet high, and has long narrow leaves, and a branched stem; *S. simplex*, (simple,) grows a foot and a half high; *S. natans*, (floating,) and *S. alpinum*, (Alpine,) are floating plants; they belong to the natural order Typhaceæ.

Stratiotes aloides. (Aloe-like Water Soldier.)—This is a stiff erect plant, of two feet high, with saw-edged, sword-shaped leaves, and producing white flowers in June and July. It is a perennial plant, increasing rapidly, and has the peculiarity of growing entirely under water, above which it rises at the time of flowering only. It belongs to the natural order Hydrocharidaceæ.

Subularia aquatica, (water Awlwort,) is a curious little native perennial plant, with awl-

shaped leaves and inconspicuous flowers. It belongs to the natural order Cruciferae.

Sweetia perennis, (perennial Felwort,) is a perennial with an upright stem, about a foot high; the root-leaves are oval, and the flowers are purple, produced in July and August. It is found in England in marshy places. It belongs to the natural order Gentianaceæ.

Symplocarpus foetidus, (fetid Symplocarpus.)—A curious inconspicuous plant from North America, belonging to the natural order Onon-tiaceæ.

Teucrium Scordium, (water Germander,) has a procumbent diffuse stem, with oblong sessile leaves, and bears pink flowers in July and August. It is found wild in marshy places, and belongs to the natural order Lamiaceæ.

Thalia dealbata, (mealy Thalia,) is an interesting plant, with ovate leaves and blue flowers, which open in July and August. It is a tall growing plant, from South Carolina, and requires slight protection: planted at two feet beneath the surface of the water, it withstands the severity of our winters, and flowers beautifully. It belongs to the natural order Marantaceæ.

Trapa natans, (floating Water Caltrops,) is an annual floating plant, with small white and purple flowers, which are produced from June to August: the stalks of its roundish leaves are hollow and inflated. The seeds (nuts) of this plant are farinaceous, nourishing, and pectoral; they contain a white sweet kernel. They are called Jesuit nuts in Venice, and are also much eaten in Switzerland and the south of France. It belongs to the natural order Haloragaceæ.

Typha. (Cat's-tail.)—These are noble-looking perennial reedy plants. *T. latifolia*, (broad-leaved,) has leaves an inch wide and three feet long, and grows six feet high, bearing close cylindrical black-looking catkins at the top of the flowering stem: it is found in every part of the world. *T. angustifolia*, (lesser,) has much narrower leaves, and grows four feet high. *T. minor*, (dwarf,) grows two feet: these are native plants. *T. minima*, (least,) a Swiss plant, grows only about a foot high. They belong to the natural order Typhaceæ.

Utricularia, (Bladder-wort,) consists of three native species, of an exceedingly delicate and fragile texture, but very fugacious, and hardly susceptible of cultivation. It is named Bladder-wort from the little inflated appendages to the slender roots, by means of which the plants are enabled to float. In hot countries the species are numerous and very beautiful. The three native species which are found in pools and ditches, are called *U. vulgaris*, (common,) *U. intermedia*, (intermediate,) and *U. minor*,

(lesser.) They belong to the natural order Lentibulaceæ.

Vallisneria spiralis, (spiral Vallisneria,) is a very curious plant, with long, narrow, strap-shaped leaves, and minute white flowers, born on long slender thread-like stems, which, as in the case of other floating aquatics, accommodate themselves to the depth of water in which the plants are growing. It grows in the south of Europe, and requires merely the protection of a frame. It is a perennial, and belongs to the natural order Hydrocharidaceæ.

Veronica. Two or three species are very pretty:—*V. Beccabunga*, (Brook-lime,) is a small perennial, with rooting stems, procumbent at the base, and growing up from one to two feet high. It has elliptical, obtuse, opposite leaves, and short axillary spikes of small bright blue flowers; blooms through the summer months. It is a native plant, frequent in ditches and water-courses. This plant is sometimes used as a salad. *V. Anagallis* (water Speedwell) is a perennial, growing erect, with succulent stems, from one to two feet high: it has lance-shaped leaves, and

produces an abundance of long spikes of small bluish flowers in July and August. It is a native plant, growing in ditches and watery places. *V. scutellata*, (marsh Speedwell,) is another native species, with narrower leaves than the last, with flesh-coloured flowers. They belong to the natural order Scrophulariaceæ.

Villarsia nymphoides. (Water-lily-like Villarsia.)—This is a very ornamental plant, with long stems, roundish, heart-shaped, floating leaves, and umbels of pretty yellow-fringed flowers, which are produced in profusion in June and July. It is a native plant, met with in rivers and streams, and is one of the most beautiful of our native aquatic plants. *V. chilensis*, (Chilian,) has pale yellow flowers in June, and requires only the protection of a frame. They belong to the natural order Nymphæaceæ.

Zizania aquatica. (Canada Rice.)—This is an upright-growing annual plant, six feet high, with long, narrow, grass-like leaves. It belongs to the natural order of grasses, Gramineæ.

GARDENING CALENDAR FOR APRIL.

THE CONSERVATORY.

THE expressive injunction, "Let every thing be done decently and in order," while it may apply to every part of a garden, becomes applicable here with a tenfold increase of force, for this is the scene which should at all times be perfect; nothing should be left undone which can minister to render it so, and nothing should be done which can in any way militate against such a consummation.

Temperature, &c.—No artificial heat will be required here again until next winter. With the advance of the season, the sun will have acquired increased power, and his invigorating influence will have a powerful effect on the interior; so much so, that, during long continued intervals of successive brightness, it may be necessary to commence using a slight shading, and to have recourse to pretty full ventilation. Added to this, light will be more powerful and continuous; and these two agencies, properly regulated and accompanied by a proper application of moisture and ventilation, will produce a very marked effect on the growth of the plants, which should be encouraged by every means that may be held to be legitimate. The temperature may range without injury as high as 60 degs. or 65 degs. with sun heat, and at night may be allowed to fall to 40 degs. Night and day, more or less air should now be given, especially whenever it is soft and mild. In fact, if this airing is

attended to—giving more in bright warm weather, and less when gloomy and cool—the temperature may safely be allowed to fluctuate just as the sun may cause it to do so, by its presence or its absence.

Watering.—At no particular time of the year, is the careful performance of this of more importance than now: most of the plants will be growing, the heat will be increasing naturally, and, with these calls pressing on the plants, they would soon suffer from neglect of supplying them with moisture. Give the permanent plants a good soaking at the roots occasionally, and also a good washing over-head with the syringe or engine, when they are not in bloom; keep a moist atmosphere by dampening the floors, &c. Plants in pots require more frequent and liberal waterings than have hitherto been afforded them.

Shading.—The state of the weather must determine this operation: if it be very bright and hot, a slight degree of shade—such as thin muslin blinds afford—will be desirable in the middle of the day, but not otherwise. Shading, when once commenced for the season, must be continued as often as there is occasion for it, until the plants have completed their growth, and their new shoots are becoming matured, which will be *nearly*, but *not quite* to the end of the summer. The plants are benefited by exposure to what sun-heat may

be available at the end of the season; and usually, at the period referred to, the house is almost abandoned to the growth of the permanent plants. Where, however, it is held desirable to keep the house filled with plants in bloom, and to maintain perfect order and arrangement, it will be necessary to continue shading, to preserve as long as possible the plants that are in bloom.

Thinning.—The permanent plants will, many of them, be growing away freely, and, when such is the case, it is necessary to look to them, that they do not themselves become crowded, or crowd the surrounding plants. Every plant in a conservatory should be a perfect specimen, and should grow without touching its neighbours on either side.

Remove the faded flowers from all the plants, for they not only prevent their growth, and thus prove injurious to them, but they have a very littery and untidy appearance.

Pruning and Training.—When any of the plants, either in pots or in the borders, are growing too freely, it is desirable to take off the ends of all the strong shoots, to keep them compact and bushy. A compact, neatly formed plant is always preferred, and it flowers better, too, than one which is allowed to make over-luxuriant shoots, and to carry them unrestricted. Now is a good time to cut down closely any old straggling plants which it may be desirable to renew; do not cut them, however, unless they are healthy; keep them rather dry, until they have shot out, then pot them, if necessary, (that is, if they are pot plants,) and attend, during the summer, to stopping the young shoots, which will be certain to grow very strong. There are very few plants that may not be cut pretty freely, when they are in health, but it is dangerous to do so if they are in a sickly state.

Climbers require constant attention, in thinning out their shoots, training them, tying in, and regulating them: this should always be attended to punctually, for it can never be well done, if allowed to get once neglected, especially in the case of such kinds as grow vigorously and make rapid progress. Some of the Passifloras, and Ipomœas, may be close pruned, to get them to flower very late. Where there are duplicate plants in pots it is always desirable to vary such operations as pruning and repotting, in order to produce a succession of bloom.

THE GREEN-HOUSE.

The principal feature of this month will be the selecting some of the duplicate plants, and removing them from the green-house to pits or frames; or some of the hardier kinds may even be taken to a sheltered place out of doors, where they can be protected by some tem-

porary covering. This thinning out of the plants in-doors will allow the best of the plants more room, and, as they will now be for the most part making their growth, they will be much benefited by the additional accommodation. Propagation generally, where required, either by seeds, by cuttings, by grafts, or any other process, may be persevered in.

HOUSE FOR MISCELLANEOUS PLANTS.—

During this month is a good time to propagate a quantity of some of the free-flowering plants, for the purpose of autumnal and winter decoration. Scarlet Geraniums, Salvias, Heliotropes, the yellow shrubby Calceolarias, and similar plants, are suitable for this purpose. Keep them growing all the summer in a cool pit, and *remove all the flowers* that show themselves, until the season has arrived when they are required.

Temperature, &c.—Keep the house as cool as possible, by allowing free ventilation night and day. Where ventilation of this nature is attempted, however, the plants should not be exposed to boisterous winds, nor cutting draughts of air, but let the circulation be mild and free about them. Let every part of the house which admits of it be kept frequently damped, in order that impalpable vapour may be given off for the sustenance of the plants. It is a good plan, where it can be followed, to flood the pathways during the hot part of the day.

Watering.—At this time of year, as well as through the summer, potted plants require assiduous watering, for, if they are neglected in this respect during their growing season, the consequences will be disastrous. Refer to what has been previously advised on this subject. It may be worth while to repeat, that it is essential that plants be thoroughly rather than frequently watered, for the latter plan often leaves the lower part of the mass of earth as dry as it was previously to the application. The plants may be syringed daily, especially those which are growing away freely.

Pruning.—All plants of suffruticose, or shrubby habit, should be frequently “stopped” as they make their young growth, especially if they are at all inclined to produce any strong vigorous shoots. This treatment is necessary to secure dwarf bushy plants. Stopping must be discontinued some time before bloom is expected.

Lachenalias.—Some of the earlier flowered plants of these pretty Cape bulbs will be now nearly or quite completing their growth, and will be required to be dried off gradually: the proper time to commence this will be indicated by the plants themselves beginning to look yellow. The earliest blooming and ripening bulbs should always be kept for the earliest

potting next year. Oxalises, and some other of this class of plants, may probably require the same treatment.

Bulbs generally should be well watered, and kept in a very light position until their growth is completed; they then require to be dried off gradually by the withholding of water.

Potting.—Free-growing plants, which require frequently to be repotted, will probably need a second shift some time during April; the ultimate size desired must be a guide—and it is the only safe one—how far this operation may be indulged in. Many other plants, of less rapid growth than those just alluded to, may be potted with advantage in this month, before they commence making their summer growth. In fact, it may be made a rule to have the state of the roots of all the plants in a collection examined by the end of this month, those that need it being repotted, and others returned to the same pots, with such attention to drainage or the renewal of the soil, as they may severally require. For examining the roots of large plants—a matter of some difficulty—a useful contrivance, registered as the “West Kent Garden-pot,” has been invented by Mr. Fry, of Blackheath.

Chrysanthemums.—Some additional cuttings of these had better be put in, or the old plants separated for stock. Those that were rooted in heat last month, must not be kept too long in the warmth, or they will become spindly and drawn.

Primulas.—Some seed should be sown, for specimens to flower next spring. Treat the plants as detailed at p. 100, and preserve them in the green-house through the winter, and they will bloom well in the spring months. After they have done flowering they may be taken out and repotted, and will bloom again by the autumn.

Melocacti.—Continue the liberal treatment recommended at p. 100, all through this month, then gradually adapt the plants again to the free dry air of a green-house. When they are not growing, the cooler and drier the atmosphere they are kept in, within moderate limits, the better for them.

Thumbergias.—Sow a few of the different kinds for autumn flowering. They are very handsome when grown into fine specimen plants.

Cuttings.—Most of the plants in this, and the other green-houses, may, if desirable, be propagated by means of cuttings. For general purposes, no better time of the year can be selected. See a more detailed account of the process, under *Stove*.

HEATH-HOUSE.—*Ericas*, &c.—Continue to repot such of the specimen plants as may be going out of flower, and commencing to make

their growth. The smaller plants which are about making growth, may also be potted with advantage. Keep in view what has been said about rough soil and perfect drainage.

Watering.—The plants generally, except newly potted ones, require to have abundant waterings—it being of course a condition that their pots have been well drained. Heath is benefited by being occasionally syringed with soft clear water; but, of course, the plants in bloom are not to be thus treated, as the blossoms would become damaged.

Temperature, &c.—At this season of the year, the temperature becomes regulated by the presence or absence of the sun; in either case it is desirable to have free ventilation night and day.

Shading will be necessary if the weather is bright and sunny. The *rationale* of shading has been already explained.

New Holland Plants.—These should be repotted as they go out of flower, and an annual growth, as perfect as possible, should be secured; upon which, and its being properly matured, their blooming next year very mainly depends. Some of the common and hardier kinds should be removed out of the house, and placed in pits or frames, where they will do fully as well, or better, than if kept in the house; and this will also allow more room for the tender and more delicate kinds.

CAMELLIA-HOUSE.—*Camellias*.—Continue the treatment detailed at p. 102. As the young shoots progress, which, if all goes on right, they will now do vigorously, take care that they are properly disposed on the plants; and, if they appear crowded in any part, displace the weakest, and retain the strongest ones, and those which are more favourably placed. When any of the plants are become bare, or straggling, they may be cut well in, to cause them to produce a greater number of young shoots; but this cutting must not be done unless the plants are in good health; and it is as well, when there is necessity of doing it, to submit the roots to a *very slight* bottom heat.

Temperature, &c.—Continue an average temperature of 65 degrees while the plants are forming their young wood; and a moist atmosphere is also very desirable. In syringing the plants, take care that the water does not run down the stems, to an extent sufficient to saturate the soil. No potted plants—except aquatics—thrive in soil saturated and soddened with water; and few will even live in it. The atmosphere of this house being now that of a mild forcing-house, it must follow the same rule as regards ventilation, namely; free ventilation must be avoided, and only sufficiently indulged in to prevent the temperature from becoming very much too hot. A considerable

portion of fresh air, daily, will doubtless be necessary to effect this, as the sun is now getting powerful.

Watering.—When the plants are in a free growing state, as they should be at this season, they are benefited by being watered sometimes with diluted manure water: every alternate, or every third application, may be of manure water, which should always be used quite clear and fine, like clarified ale. Clear soot water, made by stirring some soot into a tub or cistern of water, and allowing it to stand till it is quite clear, is an excellent stimulant for potted—or, indeed, any other plants.

Shading is necessary here, as in the case of the other structures referred to.

Grafting, &c.—This may still be done, and a quantity of small Orange plants, procured in this way, will be very convenient for forcing, while they are small. Those that were done last month should be examined, and the bandages loosened if necessary. If they were covered with glasses, these had better be removed gradually, when the union is effected.

Oranges, &c.—Orange trees, Lemons, Citrons, and Shaddocks, should be treated in the same way as the Camellias, as regards repotting and setting them to grow, but they need not be induced to grow quite so early in the season. The repotting of large Orange trees—or rather the retubbing them, for they are usually grown in tubs—is an operation of some magnitude, the large masses of soil being somewhat unwieldy. The tubs which are constructed in a quadrangular form, with one side moveable, and the bottom slightly smaller than the top, are the most convenient and the most elegant. When these tubs, or boxes, are employed, the trouble of removing them, or of examining and renewing the soil, is rendered much lighter and easier to perform. These plants prefer what is known as a strong loamy soil, and also require a very efficient drainage. They ought, as well as the Camellias, to be syringed two or three times a day while growing.

Rhododendrons.—When these have done blooming they may be repotted, if necessary; but they do not require so much heat and moisture as the Camellias and Oranges. Where they are not too large they may, therefore, be removed with advantage to the heath-house, or the mixed green-house, when the temperature of this house is increased for the Camellias.

Daphnes may be repotted, if necessary, and kept in the same house with the Camellias, with the treatment of which, that they receive may be assimilated.

Neriums will be growing freely, and will require large supplies of water. It is an in-

teresting experiment for the amateur to place cuttings of these plants in phials of water, and to observe them closely, as they produce roots in the water.

Magnolias.—Those which are kept in-doors do well with similar treatment to that of the Camellia.

GERANIUM-HOUSE.—*Pelargoniums.*—The plants that were shifted into their blooming-pots during the previous month, require attention now, to the proper distribution of their branches. For the purpose of exhibition, it is the common practice to support nearly every truss of bloom by a separate stake; but, whatever advantage there may be in this plan, it is not to be recommended for imitation—it has too much of an artificial appearance. A few stakes are, however, necessary in order to support the heavy trusses of bloom, and to afford the means of fixing them at somewhat regular distances. Whatever stakes are used let them be painted of some dull neutral inconspicuous colour, so that they may not be much observed; and let them be as slender as may be consistent with the office assigned to them. It is worth consideration, whether some wire contrivance might not be hit upon, which would serve the purpose required, and which, from its lightness, and being painted some dull colour, might not offend the eye. It is idle to talk of growing plants entirely without stakes, for, even where there are no more than half a dozen trusses of bloom, it is next to impossible that in their natural position, they could produce the display they do when fixed and regulated by some means or other.

Potting.—Continue to shift some of the later plants occasionally, for producing a succession of bloom.

Pruning.—Those intended for very late flowering should still have the points of the shoots removed: this is one of the principal means of securing a succession. No better principle can be adopted as a guide in performing this operation, than to omit a few each time the operation becomes necessary. Cut down the early flowering plants which are gone out of bloom: these will bloom again in the autumn. Take them out of the pots, and reduce the balls of earth, when they have shot out; thin the young shoots, if necessary, and repot them as they may require. Do not give them much water when they are cut down, until they have shot out afresh.

Temperature, &c.—Admit plenty of air daily, so as to keep the temperature as low as practicable, especially during the hottest part of the day. Syringe the floors, paths, walls, and every other available surface, in order to maintain a moist atmosphere. The growing plants may also be freely syringed, but not those in bloom.

Watering.—When these plants are in flower they require plenty of water. Give them manure water, as recommended for Camellias.

Shading.—These plants here, require to be very carefully shaded during bright sunshine, for, if this is neglected, it causes the blossoms to fade, and to fall much sooner than they would otherwise do: it is during very bright sunshine it is required.

Calceolarias.—Shift successional plants, and tie up the flowering stems of those which are in need of support.

Fuchsias.—The young plants should be re-potted as often as the roots reach the sides of the pots, until they are in pots as large as are intended for them. These form the best-looking plants (to our taste) when a single shoot is led upright, and all the laterals it produces allowed to hang as they will on every side.

Pelargoniums for winter-flowering.—This is a good time to get in some cuttings of the forcing varieties of Pelargoniums; they will soon become rooted, and will make nice bushy plants by the end of summer, and will flower during the earlier part of the winter in a warm green-house. The plants intended for this purpose ought to be grown with tolerable freedom; but, while they are the better for exposure to the free air, they must be so protected as not to get soddened by heavy rains: the lighter rains and dews are beneficial. Towards the end of the summer they must be got under the protection of frames, ready for removal to the flower forcing-house, to be accelerated in succession as they may be wanted.

Salvias.—Some cuttings of *S. fulgens*, *S. splendens*, *S. chamædryoides*, *S. tubiflora*, *S. Grahami*, *S. duleis*, *S. regia*, and perhaps others, may be put in, and treated somewhat in the same way as recommended for winter-flowering Pelargoniums. These plants bloom well in the late autumn months, and are at that time very serviceable for decorating the green-house.

Heliotropes.—A few may be treated in the same way as the Salvias.

Cinerarias.—Shift any of the later plants for blooming, as they may require it, and take off some of the suckers, or offshoots, from the earlier plants, which are now past blooming, and get them on as fast as possible, so as to bloom during the autumn and winter. If any seeds have been saved, let them be sown immediately; the young plants will then have become strong by the winter.

THE PLANT STOVE.

Temperature.—The plants in this house ought now to be in very active progress, and the heat may be kept up to the maximum point during the day, but it must be allowed

to fall at night. From 70 to 80, or even 90 degrees, will be a proper heat during the day-time, and very slight fires, if any, will be necessary to maintain this: sun-heat will chiefly effect all that is required. What fire-heat is required ought to be given principally in the morning, from seven to nine or ten o'clock in the day, after which it will not be required; and at night it must be made very gentle indeed, just as a safeguard against the temperature falling excessively low. 60 degs. is quite hot enough for the night temperature, if, indeed, it can be kept so low. A little air left on all night will do no harm, but so arranged as not to admit cold cutting winds, or chilling draughts of air.

Ventilation.—So that the plants are not checked in their growth, which now should be going on rapidly, they cannot have too much air; but this *must* be avoided. The amount of air admitted must regulate the temperature, to a great extent, during the day. When the sun is acting powerfully, a good deal of ventilation is required, but the cooler air should be admitted as evenly as possible over the whole area of the house.

Moisture.—Every available means must be employed for keeping up a moist atmosphere—that is to say, an atmosphere loaded, or highly charged with impalpable vapour; this is especially necessary during the heat of the day, and not so much so at night. It may be a rule to give the growing plants a good syringing—always with tepid water—every morning and evening; not with the force of a hail-storm, however, but like a gentle rain. Then every available surface, such as the walls, pathways, pipes, or flues, &c., should be kept moistened at intervals during the day; and if the pathway can be kept flooded, so much the better. Under these atmospheric conditions, accompanied by a brisk heat, as recommended, the plants will make a very rapid growth; but, in order that the excitement of such treatment may not be incessant, both heat and moisture must be slackened at night, and also when a dull or cloudy day presents itself. This course of treatment is the best and most universal cure, or preventive, against insects of all kinds.

Watering.—The growing plants will require constant supplies of water at the root: tepid water should always be used. When water alone, is given, it should be either rain water—all of which that can be saved in a garden should be conveyed into tanks for this use—or pond or river water: spring water, unless exposed for some time to the air, is the worst of all for plants. Clear manure water may be used once or twice a week: it is made by putting a quantity of deer, sheep, cows, or horses' dung into a tub, and stirring it up with water, in sufficient quantity, so that when it

has settled and become quite clear, it may be just a little coloured, something like ale. It is only to plants in a free, vigorous growing state, and especially those approaching a blooming state, that this manure-water should be given. Sickly and newly-potted plants would be injured rather than benefited by it. Any plants that have been blooming for the past month or two, and are now gone out of bloom, should have less water given them than formerly, so as to bring them into a state of rest, ready to grow away again by and by, and come into flower at the same time next year.

Potting.—Continue to reshift such plants as are required to attain considerable size: this may be done as often as the roots begin to thicken, until they are moved into pots which are judged large enough for them. Growing plants must be repotted with very great care, so as not to injure the young fibrous roots.

Pruning, &c.—During the time the plants are growing rapidly, it is very necessary to look that they do not become straggling and unsightly, for the want of a little timely pruning, or stopping back of the vigorous shoots. To do this properly some knowledge of the habits of each species is requisite; otherwise the flowering shoots may be removed, which is not desirable. In general, all very strong-growing shoots may be shortened back with advantage, whether the plants be of woody habit, or only suffruticose; and a very little observation and experience will prevent the operator from doing injury to his plants, by removing what would be required for ornament. When plants require somewhat severe pruning, it should be done just before they are set to grow; but sickly plants ought never to be severely pruned while in that condition.

Climbers.—Attention to tying in and regulating these must be unremitting.

Clerodendrons.—The blooming plants will now be commencing to grow away freely, and must be well attended to, in repotting them, and keeping them well watered,—applying manure-water in a clear state, two or three times a week. Keep them in a light place.

Achimenes.—Some more roots of these plants should be put in, to keep a succession of flowers; and these will, by the time that green-house plants are removed into the open air, be very desirable for the decoration of the green-house, where they produce flowers of much better colour, and remain longer in a blooming state. A few more cuttings may also be put in. Such plants as these can never be had in too perfect a succession. The latter are kept dormant, as long as may be required, by keeping them dry.

Cutharanthus.—Select healthy young bushes of these plants—*C. roseus*, and its varieties,

albus, and *ocellatus*, and pot them in light rich soil. By the end of May they may be taken to the conservatory, and will then flower all the summer, till the end of September. Cuttings struck now, and kept stopped back till late in the season, will flower in the stove during the winter. Their flowers are exceedingly pretty, especially *ocellatus*, which is white, with a rosy ring around the eye. These plants were formerly called *Vinca*.

Gloriosa.—If the roots were not potted last month, they should be got in early in the present one. If they are already potted, and growing, they will perhaps require shifting during the month.

Luculia.—When the plants have made shoots of three or four inches long, they should be “stopped,” by nipping out the terminal bud; this will cause them to throw out two or more shoots, and thus increase the number of bloom heads. It is only the strongest shoots that may be thus treated.

Lahesteria parviflora.—This is quite a new and, at present, rare plant, (see p. 35.) but is a desirable one, as being one of those which bloom during the winter, bearing pretty yellow flowers in profusion. The following course of treatment is recommended:—shift the plants early in this month, using sandy peat earth, with a small portion of loam, and avoiding pots of too large a size. For ordinary sized plants, a five or six-inch pot is abundantly large, and should be well drained. Place the plants in a moist atmosphere, subject to a temperature averaging about 75 degs., and where they will have the benefit of about the same amount of warmth at the roots. As the summer draws on, the plants may be hardened off in a green-house, and in autumn returned to a cool stove, where it will continue flowering for some months, at the beginning of winter. Another plant, which may be somewhat similarly treated, and which will produce plenty of very showy rosy purple flowers, is the *Beloperone oblongata*.

Cuttings.—It may be worth while here to devote a little space to the explanation of the principle of propagation by cuttings; and this will be the more seasonable, as the spring months offer the greatest facilities for this species of propagation. The cuttings of most of the plants which are termed soft-wooded, such as *Geraniums*, *Fuchsias*, &c., among green-house plants; and *Ruellias*, *Eranthemums*, &c., among stove plants, root with little trouble, if cut with about three pair of leaves, the lowest pair being removed, and the cutting cut clean through with a sharp knife, close below where they were attached; they are then to be planted in sandy earth, and set in a close frame, with or without heat, according to their nature. In general, a slight heat may

be given to them, and it will facilitate their rooting; but the hardier kinds of plants must not be too long subjected to it. As soon as they are fairly rooted, such cuttings should be potted off into single pots in soil proper for them; and they require a little nursing just till they strike root afresh, when they may be gradually hardened off to bear the treatment proper for their respective kinds. With many ligneous plants, propagation by cuttings is not so easily rendered successful; indeed, there are plants that cannot be made to root in this way with anything like facility, and with which even the most clever propagators often fail. In selecting cuttings, they should always be taken from healthy plants; and usually they will root most readily when they are in an intermediate state between the immature texture of new-born development, and the consistency and ripened condition of maturity. What are called half-ripened shoots generally take root with the greatest facility, though there are exceptions to this rule. Cuttings from side shoots near the ground, usually root better than those from the summit of the plant, or the tops of the branches. As to the precise season, the condition just noticed will be found to exist with many plants about this time of the year; with others that are not so, a proper condition of the cutting is more important than any peculiar season of the year. In preparing the cuttings, it is desirable, as already hinted at, to cut them through at the joint; and it is desirable, also, not to remove more leaves than is absolutely necessary. Where the leaves are of moderate size, and not too closely situated, the lowest pair is quite sufficient to be removed. Those kinds which are difficult to root, should be covered with a bell-glass: they are to be planted in pots of sand, prepared by half filling them with potsherds, on which a little sandy soil, of the kind suitable for the plant, may be placed, and the pot then filled up with silver sand in a damp state, pressed *quite* firm. As the cuttings root better when planted against the pot than when placed merely in a mass of soil, it is a common practice to insert a small empty flower-pot in the centre, around and against which the cuttings are placed: this pot may be filled with water, if necessary, the bottom being corked up, and the moisture will then pass gradually through the sides of the pots, and refresh the cuttings. Plants that root freely do not require so much care. The management of cuttings after they are planted, depends on the general principle, that when life is weak, all excesses of exterior agency must have a tendency to render it extinct: too much light, air, water, heat, or cold, are, therefore, alike injurious to them; and the care they require, is, by means of shading, and

keeping them covered with bell-glasses, to preserve them, as far as possible, in a steady and uniform condition, as regards these elements of growth.

ORCHIDACEOUS HOUSE.

As the growing season advances, the convenience of having two separate structures for these plants will be felt more powerfully than during the winter months. The greater part of the Indian species will be more or less in a growing state, and then require the greatest degree of heat which is given to these plants, and very abundant moisture. Such atmospheric conditions, however, are by no means favourable to the preservation of plants in bloom, nor yet to the maintenance of dormancy among those that now are, and require to be, at rest.

Temperature, &c.—The growing plants require a day temperature of from 70 to 80 degrees, by sun-heat, or even more; at night it may fall to 60 degs. with advantage. The plants at rest, and those in bloom, do not require any increase of warmth beyond that which has been formerly recommended, (see pp. 12, 58, and 104.) As regards ventilation, and the application of moisture, the directions at p. 104 may be still followed with advantage. Simmons' Hygrometer is a useful instrument for the orchidaceous house, equally so as a thermometer.

Shading.—These plants require shading during the time the sun is very powerful, for most of them, though not all, naturally grow more or less in the shade. It matters little what means of shading is adopted, provided it is effectual to the exclusion of the fierce rays of the sun. Some employ a thin mat, just thrown over the roof of the house for an hour or two daily, when necessary: this does very well for very small houses, but is inconvenient for houses of larger size. The latter are often shaded by thin canvas mounted on rollers: this plan is very effectual, and possesses every facility that could be wished; but then it is, of course, *some* expense to have properly fitted up. A more economical, and equally effectual, though less tidy plan, is to place straw ropes, such as are used for protecting wall trees, at a short space apart longitudinally over the roof: the loose projecting straws break the rays of the sun very effectually, and perhaps this plan offers as little obstruction to light as any that has been adopted. In this case it remains fixed on the roof for the season, but the other methods are only resorted to when there is necessity for them.

Renanthera coccinea.—This plant, which, though a magnificent one, is not a very free flowerer, should be grown freely in very moist,

strong heat until October, when it may be rested.

Stanhopea.—Those plants which have not been growing lately, may be expected to flower shortly, and ought, therefore, not to be disturbed or repotted, for fear of doing injury to the growing flower-buds. The same remark applies to all the plants of similar habit, namely, which protrude their flower-stems in a downward direction.

Cyrtopodium, and *Catasetum*, will, in most cases, be making fresh growth, and should be repotted, and forwarded as much as possible. When they have perfected strong stems, they may be expected to flower finely. One of the most successful instances of culture which has been achieved in this country, was in the case of *Cyrtopodium punctatum*, grown by Mr. Scott, gardener to Sir G. T. Staunton, at Leigh Park, and exhibited at one of the Royal Botanic Society's fêtes. These plants were several feet high, growing in large tubs, and producing prodigious panicles of their spotted yellow flowers.

Oncidium, *Brassia*, *Odontoglossum*, *Miltonia*, and *Cyrtorchilum*.—Many of the species of these genera will require repotting, &c., and setting to grow. When they are in a growing state they require to be freely watered with tepid water; they require only a moderate degree of heat. Other kinds, which show indications of growth, should be watered and reshifted as may be necessary.

Slugs.—The young growing shoots of these plants are liable to be injured by a very small slug, which secretes itself about the pots, and will soon injure the plants materially, unless prevented. A little lime water thrown among the pots by a syringe would, perhaps, check them; or traps made of potatoes or turnips, scooped, and laid about the plants with the hollow sides downwards, but placed so that the slugs can get beneath them, may be adopted. It would be necessary to search them daily, and destroy those that are caught.

FORCING HOUSE FOR FLOWERS.

Temperature.—The season is advancing, and with it the solar heat is increasing daily; due care must therefore be taken to so regulate the temperature of this house, as to avoid drawing the plants up weakly, or causing them to expand their flowers prematurely. This is to be effected by the admission of air in sufficient abundance to reduce the temperature to a moderate standard, say about 85 degs. with sun-heat. The night temperature may still be allowed to vary considerably below that maintained by day, as explained at p. 105.

Watering.—The supply of water to the roots must increase with the increase of tem-

perature. Maintain a damp atmosphere, and mark that none of the plants under treatment flag, or droop for want of water.

Insects.—Incessant war must be carried on against all kinds of insects which are injurious to plants. Fumigate every ten days or fortnight, if there be the least sign of green fly, for they breed so fast that a very little neglect will prove highly injurious to the plants.

Roses.—A very few will be required to be forced now, merely to maintain a supply to meet those advancing in any sheltered spot. Search carefully for the various insects which infest these plants.

American Plants, *Lilacs*, *Deutzias*, &c., will be sufficiently advanced without the heat of this structure. Care should be paid to such as have been forced, and all available means applied to assist them in their growth.

Hydrangeas, *Cacti*, and any plants advancing to bloom, may be forwarded by a little additional heat, so as to lengthen the season of flowering.

Achimenes, and similar plants, should also be encouraged as much as possible in their growth; and, if any plants remain which have not been placed in heat, they should be excited now, for late blooming.

Pinks.—Propagate these by pipings from the forced plants, choosing the stronger shoots, and putting them in pots, or pans, filled with a sandy compost, having a layer of sand at top deep enough to allow the heel of the piping to nearly reach the soil beneath. Water them well, and place them under hand or bell-glasses, as near the roof as the pit in the house will allow, plunging the pots so as to secure a mild bottom heat.

Violets should also be propagated by putting in strong cuttings, in soil similar to that recommended for pinks, and placing them in a very gentle heat.

Crassula falcata should also be increased by taking off the strongest tops of some of the old plants, and potting them in sand, plunging the pots in a moderate heat, where they will soon root.

Heliotropes, *Aloysias*, *Cinerarias*, and many other plants of a similar character, should be propagated this month, and grown through the summer, with a view to their being forced in the ensuing winter.

After treatment.—Continue to shelter, and attend regularly to all forced plants, as they go out of bloom. Repot such as require it, and be careful to damage the foliage as little as possible. As the plants have a whole season to re-establish themselves, they should be kept in the smallest pots into which they can conveniently be placed; reducing the ball of earth, and roots, by shaking out the former, and cutting away or shortening the oldest

portions of the latter, repotting them in a rich and suitable soil, and sheltering them until the weather allows of their being plunged out of doors. This treatment will be found the best for Roses, Lilacs, Hydrangeas, Spiræas, Deutzias, dwarf Almonds, Ribes sanguineum, Daphnes, and, indeed, all woody plants that are forced. These plants are several years before they require pots so large as to render them too cumbersome and unsightly for forcing. American plants hardly require so much shifting, and are, perhaps, best turned out occasionally, in order to recruit their energies.

PITS AND FRAMES.

Tender Annuals.—Successional sowings should be made, especially of Balsams, Globe Amaranths, and Cockscombs, or any other favourites; these plants will bloom later than what were raised last month. The other plants must be repotted as often as they may require it, and should be kept growing freely. They do better in a frame than in a hot-house.

Half-hardy Annuals.—Continue the directions given at p. 106. During this month a great number of those raised in pots, or on slight hot-beds, may be planted out: it should be a rule to put out all the hardiest kinds first; this would delay the operation in the case of the more tender ones, and a week or ten days so gained, is worth taking advantage of, and might perhaps be the means of saving them from being cut up by frost.

Half-hardy bedding plants.—Many of these should now be submitted without delay to a course of hardening off previous to their being planted out; indeed all the hardier kinds may be planted out during the month, especially if the situation is at all sheltered, and the season proves to be at all favourable. There are two or three points of some importance to be attended to in the preparation of these plants for planting out; one is to give them a free circulation of air at all times when it can possibly be allowed them, in order to keep them strong, vigorous, and stocky, in preference to their being large, weaker, and more lanky, which is the case when they are kept too close. Another point is, to keep them well stopped back, that is, to pinch out the ends of the shoots as soon as they have grown two or three inches long; this tends also to keep them bushy, and one plant so managed and in vigorous health, is worth half a dozen lanky spindly things, though of much larger size: this stopping must not of course be carried on too long with the plants which are intended for very early flowering. Another point is to give them all the encouragement at the root which space will admit of; by this

time of the year, a very slight shelter indeed will be sufficient for the greater part, and in consequence, they may be placed out of doors, and protected by boards and mats. This will give room to place them in larger pots; and those which have been some time in small pots, and which, if not shifted now, must continue in them for another month at least, will bear no comparison with the plants which have been brought into a free-growing state by a little attention of this kind. Even to supply plants for a large garden, the labour bears no comparison with the results. They may still be propagated, only the young plants raised now will, in the case of most of the kinds, not bloom till rather late in the season; still they will be wanted to fill up the beds when the early annuals are past.

Dahlias, &c.—The young plants must be hardened by degrees in cold frames. Seedlings must have all the air possible.

Green-house plants.—Many of the duplicate plants, and all the hardier kinds that have done blooming, may be removed to the pit, in order to make more room for the growth of those which remain, and the success of which depends a good deal on their being placed so that the light and air may play freely around them. Those taken to the pit require only to have a tolerable free circulation of air, and to be regularly and evenly watered. If any of them require repotting, it may be done.

Neapolitan Violets.—These are always in request, and especially during winter, for which latter purpose they are planted out in frames in autumn. The runners should be taken now, and planted out for the summer in rich ground, until about the end of September, when they may be taken up and planted in the frames.

WINDOW GARDENING.

A LITTLE more progress may now be made in this department. Green-house plants generally, when grown in this situation, require to be placed out of doors daily, except during storms, and to be taken in just at night in case of frost. Some of the early sown annuals, and also of the summer bedding plants, may be planted in pots of considerable size—say nine inches in diameter—in order to make specimen plants. Water in the evening: do not crowd the plants, but let them have all the air and light possible.

Scarlet Pelargoniums.—These are among the most splendid window plants that can be grown, especially if a good variety is obtained; either the old Frogmore scarlet, or a newer one descended from it, and the Ivy-leaved, and called General Tom Thumb, are the most suitable for this purpose; the latter is of a very dwarf somewhat prostrate habit, and

the other, too, is quite dwarf, and both have flowers of intense brilliancy; these plants should be *well* potted, into nine-inch pots, using a rich loamy soil and plenty of drainage; water more carefully than usual for some time after shifting. Some of the variegated plants of this class are very beautiful objects, but their blossoms are not as bright-coloured as those just alluded to.

Pelargoniums, or *Geraniums*, of the fancy varieties, may be similarly treated: the free-blooming, distinct-coloured varieties should be selected for this situation, in preference to those of high merit in the fancy. There are some old varieties of great merit for situations of this kind; as, for instance, the Ivy-leaved, a plant of trailing habit, with glossy angular ivy-like leaves; and the Bagshot-Park seedling, with finely cut leaves, and innumerable small pink flowers. Another old variety, called Helen, with agreeably scented leaves, and white flowers with fine crimson spots, is still a favourite wherever it is seen.

Calceolarias.—These hardly require pots so large as *Pelargoniums*, but otherwise they may be treated similarly. *C. rugosa*, with yellow flowers, and *C. Stewartii*, which has flowers of a deep maroon colour, are very suitable varieties for the window: choose those of shrubby habit, and which produce large bunches of small flowers.

Fuchsias do better with plenty of pot room. Select a leading shoot, and take this upright, and if well managed it will throw out side shoots all round, which are to be allowed to droop in their natural form. This mode of training suits *F. globosa* well, and it is the prettiest of all for the window. Many of the hybrids are of stiff upright growth, and will not do well this way; they must be stopped when young, and made bushy. The smaller kinds, such as *F. microphylla* and *F. reflexa*, scarcely need any interruption in this way.

Annuals.—The following sorts are suitable for shifting into large pots, as recommended above:—*Ageratum mexicanum*, blue; *Brachycome iberidifolia*, purple; *Campanula Loreyi*, blue and white varieties; *Clarkia pulchella*, rose; *Clintonia pulchella*, blue, yellow, and and white—delights in a moist peaty soil, and does not require large pots; *Collinsia bicolor*, white and lilac; *C. grandiflora*, purple and blue; *Impatiens glanduligera*, (large,) rose; *Leptosiphon densiflorus*, lilac; *Lobelia gracilis*, blue; *Nemophila insignis*, blue; *Phlox Drummondii*, varieties of all colours; *Reseda odorata* (mignonette); *Schizanthus pinnatus humilis*, various; *Tagetes tenuifolia*, orange-yellow; *Tropæolum minus*, orange.

Flower-Garden Plants.—Among these, the most suitable for windows, and which may

be potted now, as above noticed, are the following:—any of the *Verbenas*, selecting three or four of very distinct colours; *Alonsoa incisifolia*, scarlet; *Agathæa cœlestis*, blue; *Bouvardia triphylla*, scarlet; *Gazania uniflora*, pale yellow; *Heliotropes*; *Petunias*; *Salvia chamædryoides*, blue; *Selago fasciculata*, pale blue; *Senecio elegans*, double purple and double white, and a variety with handsome variegated leaves and double purple flowers.

Climbers.—Climbing plants are very elegant, either trained about the windows, or on the iron-work of balconies. Of annuals, *Tropæolum aduncum*, yellow; *T. minus*, orange; and *T. majus*, various, are among the best. Of the green-house, or half-hardy plants there is *Maurandya Barclayana*, purple; *M. alba*, white, and *M. semperflorens*, pink; *Lophospermum erubescens*, *L. spectabilis*, *L. scandens*, *L. Hendersonii*, all rose-coloured; *Calampelis scabra*, orange; *Cobæa scandens*, purple, will afford good variety.

THE ROSE GARDEN.

Grafting.—This month, even in ordinary seasons, Roses begin to grow in earnest. At the early part of it, grafting should be done. The stock should begin to swell at the buds; and whether the graft has begun to swell or not, is not of much consequence. The first thing to do, is to make a sloping cut, to take off the top of the stock, and this cut should be very clean, and close to a bud, which should be pretty near to the top of the slope. The object of this bud is to draw the sap up to the highest part of the stock. The best way to join the graft to the stock is to cut a slit in the stock on one side of the bud, not near enough to damage it, and take out a piece, with a very sharp knife, of the form of a V. There is no difficulty in this, because the Rose stock is pithy in the middle, and a sharp strong knife will go through one side very well three inches down; a smaller knife should now be used to cut the outer part of the slit wider, so as to make room for a piece of graft, cut with a sharp edge, of the form of a thick-backed knife. The cut must be very smooth, so that a graft of the proper form should fit close. This slit being on one side of the top bud in the stock, which is cut sloping, will of course be rather lower than the bud itself. Now we come to the graft: this should be of well-ripened wood; two eyes should be below the top of the stock, and one or two above; this must be cut with a sharp edge and a thick back, without the least disturbance of the bark at the back, because the piece must be fitted so that the bark is even with the bark of the stock; when you have fitted this to your mind, get bast matting, or coarse worsted, to tie it in its place; and this

done, cover the whole with grafting wax, which should be made to melt at a moderate heat, so that you can bear your finger in it without absolutely scalding; but harden in the ordinary temperature, so that it effectually excludes air from the place where they join, and thus promotes the union of the graft and stock. Another mode of grafting is to cut a slit across the stock, so as to go through both sides, then cutting the graft, of a long wedge fashion, and with a thin sharp knife, while you hold the slit open, shave off inside enough to make the slits proper to receive wedge-shaped grafts, and put in one of each side. If the stock be not very nicely cut out to receive the grafts, the slit below where they reach gapes open, and if this be too much open it lets in the weather, and perhaps rots the stock in the course of time; if it be only a little open it will close up in time. There should be no wood above the top eye in the graft, but one or two eyes are enough to a graft above the stock. The advantage of having an eye or two on the portion that is fitted to the stock, is, that they often spring out stronger than the eyes above; and we have known repeatedly the graft to unite only partially,—enough of it has joined to save one eye and no more. The bark of the Rose is very tender, and easily bruised or raised from the wood; it is therefore absolutely necessary to use a sharp knife, and make the cuts very clean. In cases where grafts have failed the previous year, the strongest of the side shoots which come from the stock may be used for grafting; cut them into branches four inches in length from the stem, and select only those strong ones which grow on different sides, that is, that branch different ways; on these shoots fit grafts in any way, either by slitting them down, and cutting out some of the wood to make way for the graft to be put in like a wedge, or by making a long slope, and cutting the graft to match, or, in fact, by fitting them any way, so that the bark on one side shall be even and join. It does not matter if the graft is only half the size, so that the bark is made to fit any one side, for unless the barks touch we can never get a good union.

Budded and Grafted Roses.—Look well at the stocks of all last year's budded and grafted Roses; take off all the growth of the stock wherever there has been any, and rub off all the buds of the stock that start. There is nothing more important to the well-being of a Rose-tree than keeping the stock from growing, for if it start it almost stops all advance of the grafted part by the vigorous effort it makes to establish itself; and in newly-grafted or budded trees it will, literally speaking, deprive them of all nourishment, and kill them. The only exception we make to this

rule is with regard to the top bud of the stock, which being there to draw the sap up past the graft, must be allowed to grow until the graft has united; but as soon as it has started four inches it must be topped to check it a little, and as soon as the graft begins to grow the growth of the stock may be stopped. Keep a good look-out for suckers, which will sometimes come up from the root, and make rapid and distressing growth, checking very much all the advances of the grafted portions. Those stocks which have had their buds fail, and are intended for budding again, should have all the side shoots cut off, and all the stem that is above the upper growing branch, because all above the upper branch is dead and useless,—not only so, but there is a risk of its dying down further: those briars which are intended for budding must be trimmed close, and cut so as to leave a bud at the top.

Pruning.—If any Roses have been left over, according to last month's directions, for late blooming, cut them back to two eyes, (or more, if the wood is wanted to fill more space,) for it will be found that all the buds toward the ends of the branches grow, long before those, close at the bottom. As the object is to make two distinct seasons with those pruned last month, your first month's pruned ones must be your guide as to the time you are to cut the last. The buds of those that are to bloom first, should be shot a good half inch, and you will find the forwardest buds of those which have not been pruned at all shot even much further: it is by cutting those forward ones off, that you leave the buds which have not started at all to make their growth, and these are of course very much behind those already pruned.

Succession Plants for the forcing house must be taken in if you are likely to require more, and so must Roses for showing in pots, but this must be regulated according to the season at which you require them. Those who want to make the most of Roses, may bloom them every month in the year.

THE FLOWER GARDEN.

Anemones.—If the weather is dry, the soil between these should be well soaked with soft water; a little clear manure water will do them good. If they are very choice, they should be shaded when the sun is very powerful.

Annuals.—Successional sowings should be made every month up to July, for the purpose of raising a supply of plants for keeping up an unbroken display of flowers: those sown now will flower onwards from the end of June. Plant them in rich light soil.

Auriculas.—Though these require plenty of air, yet they must be protected from strong

rough winds, and they also require shade during sun-shine, unless the frame is placed so that the sun does not reach them. The blooms must be carefully thinned out to the proper number.

Biennial Plants, if not already sown, may be got in at the earliest convenience.

Bulbs.—As the bulbs come into flower examine them carefully, and see that they are true; if the different sorts or colours are mixed, mark them while in flower, so that the mistake may be rectified when the roots are taken up. This applies especially to such plants as *Hyacinths*, of which the different colours are usually kept distinct. When the ground is required for other plants, the bulbs should be taken up on the first calm moist day that presents, and carefully laid in so as to ripen their foliage without being again disturbed; if this is done carefully they will not suffer very much from the change.

Canterbury Bells may be sown for next year's blooming; a good double (so called) variety is a very showy thing, and so indeed are the single ones.

Carnations.—The present month is the season for putting them into their blooming pots—eleven or twelve-inch ones; these pots will hold a pair. Those intended for beds may be planted out.

China Asters. (*Callistemma hortensis*).—The principal batch may now be sown on light rich soil, under shelter; they do not require heat.

Flower beds.—These should be prepared for the plants without delay where the bedding-out system, now deservedly common, is adopted. The ground, before the plants are put out, should be frequently stirred, and brought to a finely pulverized and well-aërated condition. Some of the hardier things may be planted by the latter end of the month, but the more tender ones must be deferred a little longer. Where the trouble is not thought much of, the whole of the plants may be got out early, and protected every night by temporary coverings. Most of the annuals may be planted.

Godetia.—This fine genus of ornamental hardy annuals offers an exception to what is usual among annual plants, for they do best in *poor* soil, especially if it be rather light and sandy; their delicate tints and markings are brought out better under such circumstances than in rich soil. Every garden should have *G. rubicunda*, *G. Lindleyana*, *G. vinosa*, and *G. Romanzovii*.

Hardy creepers.—Attend to these, and let the shoots be properly regulated as they grow; they can never be so well done, nor done at all without injury, if they are once allowed to get entangled.

Hollyhocks.—These are fine flowers for planting among shrubs; they may be sown during this month for next year's flowering.

Hyacinths.—The beds of these plants should be slightly protected at night, and during heavy rain, where fine blooms are looked for; and also shaded from intense sun-heat. Water the beds if the weather is dry.

Lawns.—When the grass is rather thin, either scatter some rich soil, mixed with some of the proper fine lawn-grass seeds, or lay fresh turf; if it is not very bad, the first is the best plan; the soil should be put on when the ground is damp after rain, and afterwards rolled down. All lawns should be frequently rolled and swept, and mown too, with perseverance and assiduity. Much of the beauty of a lawn during the summer depends on *commencing* to mow early in the spring, and *repeating* it very frequently, say once a week, for some time, till it is got to what gardeners call "a good bottom," which is simply this: the coarser grasses become weakened, and the finer ones, in consequence, grow better, and become much thickened, giving the surface the smooth soft appearance of a piece of velvet. In such a state, who does not admire an English lawn?

Narcissus.—These require similar management to that recommended for *Hyacinths*, except that they are more hardy.

Pansies.—Plant out any that may be in pots into light rich soil, and take off a good stock of cuttings for autumn-flowering; they may be rooted under a hand-glass.

Perennials.—Most or all of the hardy perennials may be sown during this month. The plants will not flower (unless in some rare instances) until next year; they may be had to bloom at different periods next year, by varying the period of sowing: sow on poor light ground.

Phlox Drummondii.—This is one of the prettiest of summer-flowering plants, but it is rather shy-growing; it does best in a cool peat bed. It may be planted out towards the end of the month if the weather continues favourable.

Picotees require to be managed exactly as *Carnations*.

Pinks.—Go over the pink beds, and press the soil firmly about the stems of the plants; the winter usually loosens it, and the plants sometimes suffer in consequence. Add a top dressing of rich light soil.

Polyanthuses and *Primroses*.—Loosen the soil among these plants if it is needed, and add a rich top dressing.

Ranunculuses require treatment similar to *Anemones*, but they are the better for rather more shading; both are benefited by having

the beds watered *between* the plants with clear manure water made from cows' dung.

Sweet Scabious.—Seeds of this plant may be sown now; the plants will come in serviceable next September, when flowers are getting scarce.

Sweet Williams.—Sow a good bed of these from the best selected seed that can be obtained: these flowers are always favourites.

Ten-weeks' Stocks.—A few seeds should be sown to produce plants for successional blooming, to follow the intermediate variety sown in autumn; these should be potted singly into small pots, when they have made a few pairs of leaves, for convenience of planting. In saving seed from any of the early blooming ones, choose the four or five lowest pods of the *central spike*, and remove all the other flowers from the plants: this is the best means of securing double-flowered plants.

Tie up the stems of any plants that require support; this is best done as soon as it is seen to be required, and not left, as is too often the case, until the stems are blown on one side, and become crooked, in which state they can never be tied up in an orderly manner. There is scarcely any operation needs more taste and judgment than tying up plants; loose disorderly ties are bad; tight close tying is bad; the use of numerous clumsy stakes is bad. It should be done in the slightest way, which will secure the desired end.

Trees and Shrubs, planted late, require to be mulched, and kept well watered if the spring is at all a dry one: when the season is a damp one this care of course is superfluous. Short grass from the lawn is a very good material for mulching.

Tulips.—Be careful to protect these from frost by night, and from very powerful sun by day, as well as from heavy rains at all times; give them a good watering if they seem to need it. Stir the surface of the soil frequently.

Wallflowers.—Seeds of the single ones should be sown towards the end of the month for next year's blooming. A good supply of cuttings of the double ones should be got in; these, though much the scarcest, are the most beautiful by far. The varieties most worth seeking for, are a double blood-red—flowers very dark; a double bright yellow, of brilliant colour, and with narrower leaves than any of the others; a dwarf dingy double yellow, called the Hornet; and a double purple, which has flowers of a peculiar purplish tint. These should be rooted under hand-glasses, and potted, and kept in pots through the winter.

Water the different kinds of choice flowers carefully if the weather proves dry: a good deal of their success depends on their being properly watered when the blooms are advancing.

THE KITCHEN-GARDEN.

ATTEND to the general remarks given last month, particularly as to keeping the soil open and clean by frequent hoeing.

Angelica.—Plant out in a damp situation, three or four feet apart. It may be planted and earthed up in the same way as celery.

Artichokes, (globe).—Thin out the old stools, and make new plantations with the strongest suckers; they will come in and be found useful in the autumn months; plant them five or six feet *between*, and three feet *in* the rows.

Artichokes, (Jerusalem).—Plant as potatoes, keeping the rows a yard apart; and if required large give more room, and dung liberally.

Asparagus.—Sowings may still be made; and, where plantations are making, have the plants dug out carefully with a fork, using one-year-old plants, and giving them a rich, deep, and rather moist soil. In established beds allow sound strong shoots all over the beds, to remain while cutting is going on. If plentiful, it should be cut and kept in a cool place, with the lower ends standing amongst water. The beds can be sprinkled with salt, which is highly beneficial.

Basil.—Sow a main crop in a slight hot-bed, and plant it out subsequently in a warm situation.

Beans.—Let successional plantings be made, and top them when they have a sufficient quantity of pods set, say when from two to three feet in height; this varies in the different sorts. The Long Pod and Green Genoa are good sorts.

Beet.—A full crop should be sown about the middle of the month, in rows fifteen inches apart: two sowings may be made. The ground, if recently manured, is apt to cause them to grow forked.

Borage is seldom required, but may be sown in any spare piece of ground.

Borecole.—Sow about the middle of the month, in the same way as directed for Brocoli.

Brocoli.—The main crops should be sown towards the end of the month, in a rich warm border, or in convenient sized beds; those in the old plantations must be cleared away before impoverishing the soil by sprouting. Sow the Walcheren, Chappel's White, Sulphur, and late Cape.

Brussels' Sprouts.—Sow the main crop towards the end of the month. Imported seeds of this fine vegetable are generally to be preferred.

Cabbages.—Sow a few frequently—the Matchless is one of the best; make up all deficiencies, and attend to clearing off those which are running to seed.

Capsicums must be sown now in a hot-bed, and potted, two or three in a pot, and kept growing until the summer, when, if planted out, they must have a warm place against a wall.

Carrots.—Sow the Surrey and Altringham for main crops, if not already done; when thinned, provide that a number may be drawn from the bed for daily use. A light rich soil is best adapted for them, if deep enough.

Cauliflowers.—Plant out all the winter standing plants; make fresh sowings, and prick out those that are forward enough in a frame or warm situation; earth up the early crops, and when the weather is fine, remove the hand-lights quite away; the whole may be greatly forwarded by liquid manures in a tepid state.

Celery may be sown on a slight hot-bed, and pricked carefully out in a rich prepared place, taking care not to choke the heart of the plants; give them sufficient room, as they are apt to get drawn: for a succession, sow in a warm border. Seymour's Superb and Solid White are excellent sorts.

Cucumbers.—Sow some of the hardy kinds for planting out on ridges; the plants should be gradually hardened from the hot-bed to bear exposure.

German Greens.—Sow these at the same time as Brocoli.

Gourds.—Sow in pots, or a slight hot-bed; the young plants may be put out in some sheltered corner, or on one end of the cucumber ridge. The top of a rubbish heap suits them well.

Herbs.—All hardy sorts that produce seeds readily, can be sown in a good situation, and the increasing of others by division, cuttings, &c., must be proceeded with. Sage is best raised from seed.

Kales.—The different sorts of Kale and winter greens may be sown and planted the same as Brocoli.

Kidney-beans.—Sowings of these may be made in warm situations towards the end of the month, but great care will be necessary that they have protection at night from cold. Sowing in heat and planting out can be done with advantage.

Leeks.—Sow a full crop, and transplant them, when sufficiently large, into a very rich soil, using the dibble, and planting deep, not fixing the plants firmly, as is common in planting other things, but merely allowing a small quantity of earth to fall into the hole, which should be left open.

Lettuces.—Sow frequently for successional crops; plant out, a foot apart, in rich and open ground. Good sorts are—Green Genoa, Paris Cos, and Victoria Cabbage.

Mushrooms.—Attend to the directions of last month for new beds, which, if ready, may

be spawned; the utmost attention is necessary to have the bed in a fit state for receiving the spawn; the covering up of the bed with earth (if they are wanted soon) may be proceeded with: some prefer turf, but a loamy soil is generally used, covering two inches deep, and beating it firm. A moist heat in the house is indispensable, and the beds must be covered with a little hay or straw, and watering must be, in a great measure, avoided. Keep the temperature about 60 degs.

Mustard and Cress.—Sow every week, and oftener if much is used.

Nasturtiums.—A few plants will be found sufficient, if they have a good situation.

Onions.—Sow in rows the chief crops, if not already done; thin out gradually, and hoe them often.

Parsley.—Give a good situation; sow in rows from a foot to fifteen inches apart, or as an edging to the quarters.

Parsnips.—These should be sown early, and rather wider apart than Carrots; put them in deep soil, quickened with lime.

Peas.—Sow once a fortnight: stop the leading shoots when in blossom; give more room to the late sorts; spruce branches may yet be necessary to protect and soften the cutting winds; attend to their staking before they are injured by wind; to stake early is commendable for various reasons.

Potatoes.—Finish planting the chief crops, using leaf mould as a manure, and planting the sets whole: a late planting for seed is much commended.

Radishes.—Sow every fortnight, in quantities according to the demand.

Rhubarb.—If much in demand, a sowing should be made on a slight hot-bed, and planted out next month; plantations can be made by dividing the old roots. It requires a deep, sandy, and well-manured soil.

*Savoy*s.—Make the principal sowing towards the end of the month. Treat them as Brocoli and Kales.

Scarlet-runners may be sown, or those raised in pots or boxes planted out, but they must be protected at night.

Scorzonera and Salsafy.—If not already sown should be proceeded with.

Sea Kale.—Sowings and fresh plantations may now be made; sow rather thick, and as they are subject to vermin, care must be taken to have them decoyed away by cut potatoes, or some such contrivance; lime is also a preventative. Sea Kale may be propagated from cuttings from the roots, an inch or so in length, planted as potatoes. Planting them in patches of three plants is found advantageous in covering them with pots when forcing.

Seeds in general may be benefited by sprinkling them over with wood-ashes, char-

coal, &c., which causes them to go on with greater vigour.

Spinach.—Sow often, and thin it well; it is commonly sown between the rows of Peas, but this is in many respects objectionable, although in some places necessary from a scarcity of ground.

Tomatoes should now be sown in a hot-bed, and well forwarded in pots before being planted against a wall; this is important in growing these successfully.

Turnips.—The main crops of turnips, say the Dutch and Stone, can be put in towards the end of the month, or beginning of May; sow in damp weather, and let the ground be well wrought; thin out with a hoe, as being more expeditious and effective; protect all from the ravages of birds, &c.: the seeds of all the Brassica tribe are especially subject to these attacks.

Vegetable Marrow.—Sow a few of this delicious vegetable in hot-beds to plant out on ridges, in the same way as ridge Cucumbers.

General Remarks.—If the weather prove dry, it is well to water the ground for such crops as Peas and Beans before planting, covering them up with the dry soil to prevent evaporation. Plants, too, which have to be transplanted should have their roots puddled and watered when planted. It is a good plan to tread in the seeds if the ground is not wet, and to prick and plant out early.

CUCUMBER AND MELON FRAMES.

Cucumbers.—Sow seeds to raise a few successional plants; they are often found useful. A light or two may be planted out for succession, or when none have yet been planted it may now be done. Plants that are "ridged" out, and are growing freely, must be stopped rigidly, or the frames get full of useless vine. Refer to former directions. Sow seeds of the hardy ridge Cucumbers, for planting out in May, under hand-glasses.

Melons.—Sow the main bulk of Melons. These require a rich, rather strong, loamy soil, and a day temperature of from 70 to 80 degs. to grow in; at night 60 or 65 degs. is sufficient: water them pretty freely until the fruit blossoms are produced, then decrease a little; do not water over the plants, but on the soil, and around the sides of the frame. One plant is enough for a light; take two leading shoots in opposite directions from each plant, and stop them when they have run the width of the light; the laterals from these shoots must be trained in an opposite direction, and will bear the crop: do not let one or two fruit set before there is a crop all over the plant; when they are set, stop the shoots a joint or two beyond each; none of these branches should be allowed to carry more than

one fruit, and five or six fruit, on an average, to a plant is an abundant crop: size—all other conditions being equal—will depend on the number produced by the plant.

FRUIT GARDEN.

It may be presumed from the earliness of the season that all the operations here, will be much advanced. The general principle of keeping the ground clean and open will be found of the utmost consequence.

Apples.—A sharp look-out must be kept for the caterpillar, which, from the mildness of the winter, may be expected to be plentiful; probably to gather them with the hand, if they are observed in time, may be the most effectual way of keeping them down. Great attention should be paid to the thinning of the fruit of the apple; the result would be fruit of a superior description.

Apricots.—Protect by netting, which will both keep them later and ward off frosts. Great attention must be paid to the disbud-ding, making it as a rule that the foreright and all buds be taken away, excepting the leader and the bud near the base on the upper side of the shoot: a few spurs may be also left; and lay in the wood from four to six inches apart; the shoots can be stopped when it is wanted to fill up a vacant space. The quantity of fruit left must be determined by the state of the tree.

Cherries.—Care must be taken to protect the blossoms. Thinning the fruit should be attended to; and the trees must be smoked on the first appearance of green-fly.

Figs will now be clear of the winter covering, but it will be well to have it not far removed, as cold weather may yet give them a severe check.

Gooseberries and Currants.—Caterpillars must be here attentively looked after; shaking the bushes, and destroying them with lime-water, and also syringing with the same, or with any water in which alkalies have been steeped, is recommended if done early. Thinning the fruit, which is intended for dessert, should not be overlooked.

Grafting.—This may still be effected if the scions have been kept back.

Mulching and Staking newly-planted trees must not be omitted, especially if they are planted shallow.

Pears.—The finer sorts in particular are much improved by being disbudded and disblossomed, and by having the fruit thinned.

Peaches and Nectarines.—Protect by spruce-boughs or oil-cloth in the evenings; before the leaves expand it will be of benefit to wash them with soap-water and sulphur, applied by the engine. Should green-fly appear, a decoction, well squeezed, of the peach

twigs, preserved from prunings, can be applied in a similar way. Attend to disblossoming and disbudding: this is the time to perform the art of pruning aright; leave no more wood than is requisite for a perfect tree the following season; stop the leaders when wood is wanted.

Plums.—Treat these the same as the Peach, but they do not require so much protection, and are generally more spurred; if the trees are very dirty they may be headed down.

Strawberries.—They will require waterings if very dry when in flower, and scatter between the rows short grass or such like; add liquid manure after the fruit is set.

Vines.—Thin and nail in the shoots, and protect carefully.

high, and has a close spike of flowers from the axil of every leaf. As far as it has been grown in this country, it has reached three feet, or even more, in height, and the leaves, instead of the flowers, have predominated; we may therefore devote the remainder of this notice to a brief consideration of this subject, since it will be unnecessary to dwell more at length on a mere description of the plant.

The difference between the plant in its wild state, and as hitherto cultivated, is entirely the consequence of the treatment it has received. It is well known to those who are familiar with the habits and culture of plants—though perhaps such a thing is never even suspected by those who do not look deeper than the surface of things—that while a certain mode of treatment will cause particular plants to develop what are called their organs of nutrition—that is leaves, &c.—a different course of treatment will check the production of these organs, and induce the development of the organs of reproduction—in other words, the flowers, &c. We shall not in this place inquire why and how this takes place, since that would lead us on to disputed ground; and we shall therefore only mention the fact, leaving it to those of our intelligent readers who have leisure and inclination to do so, to prosecute this inquiry for themselves. It will be more to our purpose to notice briefly the kind of treatment which respectively produces such apparently opposite results.

And first, as regards the mere extension of the plant. It may be presumed that the three principal agents which affect the growth of plants, are heat, moisture, and light. When moisture becomes freely absorbed by the tissues of the plant, they are expanded in a proportionate degree; and when this is accompanied by heat in a degree too powerful for the plant, an elongation of the mass of tissue takes place, the plant becomes apparently larger, but without containing within its structure any materially greater amount of assimilated matter: when they are therefore acted on in this way, a mere growth of leaves and stems, with but little, if any flower, will be the result; and this will be more particularly the case if the amount of light is disproportionately small. If the heat is not excessive, a more powerful degree of light will make some amends. On the other hand, the flowering of plants depends on the amount of matter they assimilate from the food presented to them, and light is the agent which promotes assimilation. When, therefore, plants are subjected to powerful light, they produce flowers in the proportion that light bears to the heat and moisture acting on the plant, and as they each bear to what is adapted for the particular habit and structure of the plant.



(Half-size.)

PTEROSTIGMA GRANDIFLORUM.

(Benth.)

LARGE-FLOWERED WINGPOINT.

A PRETTY full account of this plant having been given at page 128, it will be unnecessary here to describe the plant further than to say, that it is a cool stove, or probably a greenhouse plant, with ovate hairy leaves, and two-lipped, large, showy blue flowers, which are produced from the axils of the leaves—in a wild state in racemes, but under cultivation as yet only solitary.

It is one of the new plants sent to the Horticultural Society from China, by Mr. Fortune, who speaks of it as a gay plant, growing on hill sides and near streams of water. It appears that in its wild condition it does not grow more than from a foot to eighteen inches

Now in the case of *Pterostigma*, the plant has been kept in too warm and close an artificial atmosphere; and the preponderating force which this, of itself, would give to the production of leaves, was, during the season of 1845, augmented by the partial amount of direct light which was experienced. According to our ordinary notions of the effect of these agents on the growth of plants, the result could not have been otherwise than it was. To cause the plants to flower freely, to grow more dwarf, and to develop the blossoms in their natural disposition (in racemes), a lighter summer than that of 1845, and a less amount of heat and moisture than is usually found in plant-stoves, would appear to be necessary. Probably, what is understood by a warm green-house would afford a sufficient degree of warmth for growing the plant; or, if it should be found to require the average heat of a plant-stove, it must have a clear atmosphere. What is actually necessary, will have to be found by experiment. Very often, for want of this experimentalizing, a handsome plant gets condemned as worthless, just because the proper treatment was not at once hit upon. We have in this space only glanced at the subject, but we trust our amateur friends will understand us.

Besides the means already hinted at in connexion with the natural agents of growth, of inducing a flowering condition, the practice of confining the roots within the limits of a comparatively small pot may be found to be necessary: this mode of treatment has usually the effect of checking *growth* and *promoting* flowering. It is stated that the plant requires shade during hot sunny weather; for our own part, we should be rather chary of shading it. In the winter it requires to be kept rather dry.

It appears to be a common plant in China; and, though new to our gardens, was among the earliest dried plants procured from that country. It is the *Gerardia glutinosa* of Linnaeus, and the *Digitalis chinensis* of Loureiro. The leaves of the plant are stated to be agreeably sweet-scented. It is stationed in the natural order, Scrophulariaceæ; and in the Linnæan, Didymia Angiospermia.

THE AMATEUR'S FLOWER-GARDEN.

A FLORIST can do wonders with a very small bit of ground, and no great quantity of glass; with a little labour, and not much expense. Twenty rods of ground, in a good situation, will enable him to compete with a whole nursery, and, with care, distance very large cultivators. Twenty rods of ground may be about twenty-two yards wide, and twenty-eight yards long. The preparation of this, for the growth of florist's flowers and

plants, is, under present circumstances, not a very expensive affair. Say we begin with about six frames and glasses, such as are made for hot-beds, and also used to protect things in winter; the general size of these lights is five to six feet long, and three feet six inches wide. Some have these frames made so as to have two lights, or three lights, to one box; but there are many good reasons to prefer for those in a small or moderate way, frames with only one light to a box, as they are easily removed, and can be used for different things independently of each other. We must premise, that for winter protection the ground on which these frames are to stand, should be paved, or bricked and cemented, or slated, or made with asphalt, as in no case is it good that the ground should be in a state to absorb the damp, which is the great enemy in winter time. We will suppose the amateur florist to be a determined exhibitor of all florists' flowers; one of these lights will be filled with Auriculas, one with Picotees, one Carnations, one Verbenas, one with Pansies in pots, size 24, for blooming early, and one with store pots of cuttings, &c. The Pinks will be planted out, or, if not, are in small pots in one of the frames. Polyantheses will be in their open borders, or, if grown in pots, which we do not recommend, must be also in a frame; for, be it known, that all plants, even hardy ones, in pots, expose their roots, which adhere to the sides, and therefore require protection, while those in the ground do not. In this garden there is ample room for beds of Ranunculuses, Anemones, Tulips, Irises—now becoming a favourite flower, and for a collection of that king or queen of the garden, Roses; a few hand-glasses and blooming-glasses for Carnations and Picotees and shades of various kinds, to protect any favourite blooms. Set a portion of the ground, say one rod, separated by a hedge or fence of some kind to hold the heaps of compost, which are always unsightly, and in this place get turfs, sand, loam, peat, cow-dung, horse-dung, the dung of poultry, Carnation sticks, pots, &c.; place here, also, your spare hand-glasses, and all the contrivances for shading and covering. In this space, too, have your hot-bed, if you have one at all, because, to raise many seeds, even the tender annuals, it will be found requisite; and, by keeping it in this confined space, the garden may always be kept clean. In this space you should have a shed, or out-house, to keep tools and things requiring protection from the weather, and also to use for potting your plants, keeping your seeds; and, if it be built in a substantial manner, and well weather-tight, it will do to store everything connected with the garden. Of twenty rods of ground, two might be devoted to this, which may be

called the workshop part of the garden ; five rods to Dahlias, three to Roses, one each to Anemones, Pinks, Ranunculuses, bulbs not enumerated, clump-flowers, such as Petunias, Verbenas, and Pansies ; two to Tulips, and two to other subjects ; but more or less may be given to one or other, as the fancy of the cultivator leads him to prefer or decline them. The principal thing to look after, is a good fence or wall ; and as to soil, such a manageable-sized garden could almost be made new ; and indeed a good deal of it would be so, for the beds of Tulips, Ranunculuses, Pinks, and some others, would require a considerable portion of loam if it were not the natural soil ; and as we mostly have to locate where we can, instead of where we desire, we must make the best of it. The whole should be well drained, for it is a waste of labour, of seed, and of plants, if we do not. In vain may we dress the ground and form new beds ; the finest compost in the world will be spoiled if the drainage be not good, and all our labour would be lost.



(Half-size.)

MULGEDIIUM MACRORHIZON.

(Royle.)

LARGE-ROOTED MULGADE.

HARDY autumnal flowers are always welcome ; and any addition, moreover, to our blue flowering plants, is sure to be looked upon favourably. In the present subject we have a perennial plant, nearly, if not quite, hardy, of prostrate habit, and producing very pretty blue flowers during the autumn.

The plant has a thick fleshy root, of perennial duration, and prostrate or trailing stems two feet long, and rising but a few inches from the ground : the leaves are pinnatifid and

amplexical, or clasping the stem, and the flowers, which are of a pale delicate purple-blue, and individually very much like those of the wild Succory, are borne by the plant in a subcorymbose manner ; these are produced in September and October, in great profusion, and are succeeded—the earlier ones at least—by seeds, from which young plants may be raised with facility.

For ornamenting rock-work the peculiar habit of the plant admirably fits it ; and in such a situation it is unsurpassed, remaining a long time in perfection during the autumnal months, and covering the stones among which it is planted with a carpet of lively hue. In such situations, and for such a purpose, it is equal to anything we have in cultivation. The only drawback seems to be, that its fleshy roots are impatient of wet, on which account it requires protection, or the plants become injured during the winter by the dampness of our seasons. For this reason, it is necessary to place the plant in a situation where the soil is well drained and rendered quite dry during the winter ; and some slight means of protection, sufficient to throw off the water from the plant, must be employed. A hand-glass supported over the plant at a short distance from the ground, so as to throw off whatever rain might fall, admitting, at the same time, a free circulation of air to the plant, seems to be the best way of accomplishing this end. Waterproof covers, made of the asphalted felt, are also to be recommended for plants of this habit ; in addition to these, if the soil is covered for a short distance around the plant with some *dry* material, such as sawdust, ashes, &c., their safety will be rendered more certain.

It was raised from seeds collected in Cashmere or Thibet, and presented by Dr. Royle to the Horticultural Society of London. It belongs to the natural order Compositæ—such flowers as the wild Dandelion, and the Goat's-beard, and in the arrangement of Linnæus ranks under Syngenesia Polygamia.

CULTURE OF THE GARDEN PEA.

ALL varieties of the Pea require a deep, free, loamy soil, well manured, and deeply dug, or even trenched, so as to leave it light and porous. In sowing, the rows should range from north to south, except for the earliest crops. Sow thin, keeping the seeds of the tall-growing sorts at least three inches apart, and covering them about an inch, or an inch and a half, with the soil. It is usual to have the rows from three to six feet apart, according to the strength of the variety ; but it is much better to sow at far wider intervals, fifteen feet on an average, by which means

shade is afforded to any crops between the rows, which will, in almost all cases, be found beneficial. The different crops must of course be kept perfectly clear of weeds, and the ground should be deeply stirred occasionally near their roots, especially before watering in dry weather. A good soaking with liquid manure should also be given now and then.

Bearing these general remarks in mind, the time for putting in the various crops may now be mentioned. The first sowing is generally made in November, in a warm, sheltered situation, as, under a south wall. An excellent plan for all the earliest sowings, is to ridge up the quarter selected into banks running east and west, with a steep slope on the north side, whilst the south should have an inclination of about 45 degrees. Care must be taken that the drainage is perfect. The Peas should be sown in a drill near the middle of the south face of the bank, and must be protected in hard weather with a layer of old tan, sifted ashes, or similar material; and when further advanced, by small branches of trees, or fern, stuck along both sides of the rows; but as Peas grown on this plan, instead of being staked, are allowed to spread on the ground, the spray should never be used longer than just sufficient to protect the plants for the time being. These banks are also very useful for other tender crops when the Peas are cleared away. If the earliest crops are sown under a wall, the stakes should lean away from it, so as not to interfere with the trees on it. A second crop is generally sown in December, when the weather is sufficiently open, and especially if those sown in November fail. With all the care, however, that may be taken with these crops, they seldom produce Peas fit for use a week before other crops sown in the spring, more particularly if the Peas be forwarded in heat, and transplanted when most of the bad weather is over. Various ways of raising the Peas for this purpose are resorted to. A good plan is to take strips of turf, two or three inches broad, and any convenient length, and cut a groove in the under side, in which sow the Peas; place the turfs close together, with the grooves upwards, in a pit or frame, and cover the Peas an inch or so with leaf or other light mould. The heat must be very moderate, and plenty of air must be given when the plants come up to harden, and keep them dwarf, as if drawn up ever so little, they are seldom of any use, being very liable to rot at the ground, or *shank off*, as it is termed, and also to be broken over. When a place is prepared for them, the turfs can be lifted out whole, and placed in drills; the roots get thus very little disturbed, and the plants progress rapidly. If sown in pots, or boxes, similar precautions must be taken, and great

care is necessary in transplanting, so as to injure the roots as little as possible. In this operation, the drills should be made sufficiently large to admit a portion of fine prepared soil to be put round the plants for them to root into, and the plants will be benefited by raising the earth in a ridge higher than themselves on the windy side of the rows. These crops may be staked or not, according to the situation they occupy; but where they can be staked, it is certainly best to do so, if only on the score of neatness.

The next series of crops, for summer use, should be sown about the beginning of February, as early in the month as the weather will allow. From this time till Midsummer, additional sowings should be made about every ten days, or, as the old gardeners used to word it, "as soon as those last sown appear above ground." Of course, attention should be paid to the sorts used as the season advances; * the first sowing of the Marrow varieties being made from the middle to the end of February, while the Sugar Peas must not be sown till the beginning or middle of March. The last crop for producing Peas, as long as the weather will permit, up to November, may be put in the ground a little after Midsummer, and, as well as all the summer-sown crops, must be attentively attended to with water, which should be given in thorough soakings, and not so as to wet the surface only, and make it cake or bind hard round the stems of the plants. As the crops advance in growth, they should be occasionally moulded by drawing some fine earth up to each side of the rows; the last moulding being given just before they are staked. The stakes must be proportioned to the height attained by the different varieties, and should be firmly inserted in the ground, and when the crop is staked, the tops of the spray should be clipped off to a regular height, so as to leave the work neat. Some of the Marrow Peas should have the tops of the plants pinched out, which will cause them to branch; and in the strong-growing sorts this may be done two or three times, and as many crops of Peas may be gathered from the same plants, if properly attended, and watered as before recommended.

PLANTING BY THE SEA-SIDE.

BY JAMES GRIGOR, NORWICH.

To raise trees by the sea-side is one of the grandest triumphs of arboricultural skill. To plant *anywhere* successfully, confers peculiar satisfaction on the planter; but to raise a sylvan bower, whence the grandeur of the ocean can be closely contemplated, is in every

* For description of all the best varieties of Pea see page 123.

respect more interesting and important. It is almost unnecessary to wait to enforce this position. The sea—one of the grandest features in creation—is viewed with awe and delight by all; but, in almost every instance, what a picture of sterility is spread out along its shores! Even our most fashionable watering-places, with reference to their natural scenery, may with truth be represented as “dull and treeless.” I shall therefore conclude, that to invest such scenes with rich sylvan furniture, is a point worthy of the closest attention.

Where has such a thing been done? will no doubt be the first question. To this I reply, that the examples are to be seen on the cliffs of the German Ocean, in the parishes of Runton and Trimmingham, in the county of Norfolk, the property of Sir Edward North Buxton, Bart. There are in all about twenty plantations in these parishes, extending over a space of about 120 acres, but I select one in particular, which will afford a striking illustration of successful maritime planting; it is called the “Boreas Plantation.” The plants stand on a bold cliff, 250 feet above the level of the sea, towards the north-west, and part of them only twelve yards from the beach. Standing on this plantation, the beholder looks down upon a wide expanse of the ocean, which is here literally whitened by the sails of the Scotch and Baltic traders. Its commanding prospect has recommended it to the officers of the Preventive Service, for here their watch-house is erected. This, then, is the locality.

How it has been planted is the more important question; and here I shall take care to state the details minutely. The first thing to be done, is to have the soil trenched with the spade, to the depth of 20 or 24 inches. This will cost 6*l.* per acre. Cheap processes of planting in such situations will prove of no use; they have been tried repeatedly with no success; and I have little hesitation in stating that it cannot be done effectually without the preparation alluded to. When trenching is put out to be done, at so much per perch, I have known unprincipled men leave about a third of the ground undisturbed. It should therefore be done either by the day, or with the understanding that if any part of the soil should be found unbroken, the price of the whole would be withheld.

2. The time for planting is of the greatest moment. All planting by the sea-side should be done during the month of March, or in the first fortnight in April. The plants will thus be free from the cutting winter's winds, until they have established themselves in their new situations. Some will no doubt go and try a half measure, by planting at the proper season on *untrenched* soil: let them do so—success cannot be theirs. It should be continually

borne in mind that planting, under the present circumstances, is not at all *encouraged* by Nature; it is a union of the wild and tame which, though permitting, she does not foster; and Art, therefore, has to use her utmost exertions to compensate for the want of that encouragement.

3. So difficult is the work of maritime planting, that, in addition to the land being well prepared, and the best season chosen, there must be *shelter* created; and this should be done in two ways—as an outside work, by erecting a strong high fence of furze bundles, or brushwood, around the plantation, and by planting the young trees very close to each other, leaving only about a space of eighteen inches between them. At this rate, 19,000 plants will be required for every acre of land.

4. Cleaning the land for two years is all-important. The best plan is to take a crop of carrots or parsnips from the land the first year; and this will pay all the expenses of hoeing, &c., and do no injury to the trees.

The next point is to select the kinds of trees best suited for such a situation; for, if this should be neglected, the other instructions, as a matter of course, would be rendered useless.

The first deciduous tree adapted to the situation under consideration, is the Norfolk Black Sallow, a variety of the *Salix caprea*, thought by some to be peculiar to Norfolk: it is a most determined grower, even close to the water, and a tree which attains to a large size. In the parish of Runton, in the neighbourhood of the sea, is a specimen which, at four feet from the ground, is nine and a half feet in circumference. It was the appearance of this tree, in such a situation, which led to slips of it being tried in the plantations above referred to. The quality of the wood of the Sallow is by no means first-rate; and it is rather recommended as a nurse to others here mentioned, than as fit to occupy the ground permanently. However, in some maritime situations, any sort of tree would be gladly accepted, and, as it is not devoid of beauty, it should be planted where those of a better texture do not thrive. It will give some idea of the vigour with which this tree proceeds, when I state that, after the second year, it throws up shoots an inch and a half in diameter at the bottom; and, if trained to a single stem, it will become a tree twenty feet high, in four years. Slips or cuttings are quite equal to rooted plants, and there is a great saving in carriage in ordering the tree in the former shape.

The next best deciduous tree is the Black Italian Poplar, which may be readily obtained of any nurseryman. It is late in leafing, and to this circumstance, I think, is to be attri-

buted its success in the situations under consideration.

The Scotch Elm forms a noble addition to the few trees suited to grow by the sea-side. On untrenched soil this plant becomes bark-bound, and covered with lichen; but, where its roots have liberty, it grows very rapidly.

The Alder is also to be recommended in plantations adjacent to the sea. Damp or swampy land is usually planted with Alders, and it is sometimes thought that it delights only in such soil; it is found, however, to grow luxuriantly in dry places, where the soil is loosened to the depth of two feet.

The Birch, Larch, and Ash do not always refuse to grow by the sea; and, with the aid of the Sallow for a few years to start them, I have found they succeed very well.

Amongst evergreens, the best tree is the *Pinus Pinaster minor*, a more robust grower than the common *Pinaster*, with shorter and thicker foliage. It is plentiful in the extensive *Pinaster* plantations of Jack Petre, Esq., Westwick, Norfolk, and it is there called the *false Pine*, the common *Pinaster* being termed the *true Pine*.

Very little inferior to the foregoing, as a maritime tree, is the Scotch Pine, *P. sylvestris*. Its wood is superior to that of the *Pinaster*, and, if the better variety, with red wood, is obtained, a more valuable tree can scarcely be had.

Amongst shrubs, my experience is not so extensive. The following, however, I have proved to be fitted to stand the sea-air. The Elder, Snowberry, Berberry (*Berberis Aquifolium*) and the common Broom.

One other point has to be attended to, I mean the size of the plants. Cuttings of the Sallow will grow freely, and the other plants should not exceed four years in age. Plants which had been transplanted in the nursery the year previous to that in which they are used, are to be preferred to any others, for such are invariably furnished with small fibrous roots.

With such trees, planted at the proper season on well-trenched soil, I should have no fear of being able to raise plantations on the sea-coast, wherever there is any depth of soil. A beach of pure sand can never be made to bear any sort of ligneous vegetation; but all other situations, and especially our watering-places, which now present a scene of frightful sterility, are quite capable of being made green and shady. I am aware that sea-side planting forms a work often undertaken, and as often unsuccessful; but still, *there is a way* by which success is certain, for no tract of land can be more exposed, or nearer to the sea, than the "*Boreas Plantation*," now flourish-

ing in defiance of those obstacles which, till lately, were considered insuperable.

DESCRIPTIVE LIST OF POTATOES.

EARLY VARIETIES.

THE *Early Frame* has moderate foliage, with roundish tubers, and a smooth skin. The flavour is very good; and this variety is, perhaps, more grown in frames, &c. early in the season than any other.

Fox's Seedling is a round potato, something resembling the last, of good quality, and also much grown, but a bad cropper.

Fox's Early Globe has light green foliage, round few-eyed tubers, which are mealy and good flavoured.

Fox's Early Kidney has light green leaves, with long regular tubers, and a smooth skin, cooking well, and of good flavour.

The *Ash-leaved Kidney* has pale narrow leaves, a tuber swelling regularly to a good size at the nose, smooth, and of most excellent flavour. Almost universally grown for forcing and the earliest out-door crop.

The *Early Manly* has broad green foliage, round large white tubers, of excellent quality, and is very productive. A most valuable sort for a general early crop.

The *American Native*, with upright, light green foliage, of vigorous growth, and roundish, rather flattened tubers; white, and slightly-rough skin. An excellent variety for the table, although rather small.

The *Early Shaw* has a strong rough foliage, of medium growth; round, rather irregular shape, and roughish skin. A prolific sort, and very extensively grown near London, to supply the markets early.

Taylor's Fortyfold has light green foliage, with oval, much-flattened tubers, of a dull red colour, mealy, and of very superior flavour. A good and very prolific variety.

The *Early Betty* has moderate dark green foliage, with roundish rather flattened smooth white tubers, of medium size, but producing large roots as a frame variety. One of the very best for frame growth, and for the first out-door crop; extensively cultivated in Surrey.

The *Hopetoun Early* is an early variety, with round tubers, of tolerable size, and excellent flavour.

The *Ladies' Fingers*, or *Rufford Kidney*, has deep-green foliage, and curved, kidney-shaped tubers, with a white skin. A good-flavoured, mealy, handsome-shaped sort. Highly prized in Lancashire as one of the earliest varieties.

Soden's Early Oxford is a new variety, much grown and highly esteemed in the neigh-

bourhood from which it is named. There is no better eaten.

The *Cornwall Kidney* is a variety with a tuber small and sharp-pointed next the stalk, but swelling to a good size at the nose, with a smooth white skin. A sort largely grown in the county of Cornwall for the early supply of the London market.

Chapman's Early Kidney. — A variety which will bear late planting and taking up all the winter and spring as new potatoes; and if planted in July, dug in November, and well stored in pits, will be equally good. It is tender, of excellent flavour, and has a delicate skin. They cannot be distinguished from new potatoes by their appearance, and even in the eating, only by being drier and better than those under glass.

LATE VARIETIES.

The *Champion* has broad, rough foliage, and round, rather full-sized tubers, with deepish eyes. A good field variety, but old.

The *Old Flat White* has large foliage, with oblong, flattened tubers, and smooth skin. Flavour very good.

The *White Bread-fruit* has light-coloured, roughish foliage, roundish white-skinned tubers, of good flavour, very prolific, and keeps well.

The *Early Field Kidney*, with deep-green foliage, flattish tubers, swelling gradually from the stalk. A moderate field variety.

The *Albany Kidney* has a great deal of broad foliage, and large, curved, and flattish tubers. An excellent sort, of superior flavour.

Edinburgh Dons, with pale foliage, and round tubers, having purple eyes. A good variety.

The *Blue Dons* have a darker foliage than the last, and with similar tubers to the last in shape, but of a dull purple colour.

The *Devonshire Apple* has rather tall foliage, with large round pink-eyed tubers, of a very good flavour. A good and prolific sort, being one of the very best late keepers.

The *Irish Apple* has deep green foliage, with roundish tubers, much hollowed at the ends, and reddish eyes. A good variety, and has been long in cultivation in Ireland.

The *Black American Pink-Eye* has darkish thick foliage, and roundish tubers, with red eyes. Of good flavour, very prolific, and an excellent keeper.

The *Cork Red* has dark green foliage, with longish flattened tubers, of a reddish colour. A good-flavoured mealy variety.

The *Perthshire Red* has light-coloured foliage, with rather oblong flattish red tubers, of good flavour. A highly esteemed sort.

The *Poor Man's Profit* grows close in its foliage, with round tubers, of a dark reddish

colour. Of superior flavour, and much grown in some localities.

The *Red Bread-fruit* has light coloured foliage, with roundish flat red tubers, which cook mealy, and are very good-flavoured.

The *Red-nosed Kidney* has light green foliage, with large, long, rather bent tubers, with red eyes. A very desirable variety.

The *Bedfordshire Kidney* has rough lightish coloured foliage, and long, large, straight tubers, of a reddish colour, and good flavour.

Irish Lumpers have dark green foliage, and large roundish flattened tubers, with a rough white skin. An indifferent variety, but very large, and very prolific.

The *Irish Cup* has upright deep green foliage, and large uneven shaped tubers, of a dull reddish colour. A good flavoured Irish variety.

Connaught Cups have a considerable quantity of large foliage, with oblong reddish tubers, of good quality. A large and good sort.

The *Oxnoble* has rough dark-coloured foliage, with oblong flattened white tubers, of indifferent quality. An old sort, but still much cultivated in some localities.

The *Kentish Seedling Goldfinder* has pale foliage, and round white tubers, with rather deep eyes. Of good flavour, and prolific.

The *Goldfinder* has light green foliage, and roundish white tubers. Is rather earlier, but not so highly esteemed as the last.

The *Sheep's Tail Kidney* has dark green foliage, and thick long flattish tubers, white-skinned, and good-flavoured. A handsome root, and rather early.

The *Regent* has tubers of a roundish shape, rather smaller at the nose, or that end where the most eyes are placed. It is of vigorous growth, productive, and of good quality.

The *Leathercoat* has large foliage, and a roundish flattened tuber, and is a productive and good-flavoured sort, and also a good keeper.

The *Mangold-Wurtzel Potato* has very strong growing stems, and large long tubers, of a pale red colour.

The *Prince de Rohan Potato* has very strong-growing dark green foliage, and large round red tubers, with the eyes very deeply sunk. This and the last are very productive varieties, but require a great deal of room.

As a selection from the foregoing list, the following will comprise all the varieties necessary for ordinary purposes.

FOR EARLY FORCING.

The *Ash-leaved Kidney*, the *Early Frame*, the *Early Betty*, *Soden's Early Oxford*, and *Chapman's Early Kidney*.

FOR EARLY OUT-DOOR CROPS.

In addition to the above, Fox's Seedling, Fox's Kidney, and the Ladies' Fingers.

FOR MAIN AUTUMN CROPS.

In addition to any of the above, the Early Manly, Early Shaw, the American Native, Taylor's Fortyfold, and the Sheep's Tail Kidney.

FOR LATE CROPS AND LONG KEEPING.

The White Bread-fruit, the Devonshire Apple, the Black American Pink-Eye, the Perthshire Red, the Red-nosed Kidney, the Irish Cup, and the Regent.

The *Mangold Wurtzel* and *Prince de Rohan Potatoes* produce immense crops of very large tubers, of very indifferent flavour, but, on account of their great yield, they are very fit for cattle crops, but are much too coarse for the table.

Potatoes appear to prefer a sandy loamy soil, not retentive of moisture, yet not drying up too suddenly. On many very stiff lands they also do well, but free open soils are decidedly to be preferred. On this account, very light lands are best adapted for the early varieties, which complete their growth before the season becomes too dry. For stiff soils, the following are recommended with confidence:—The Bread-fruit, the Regent, the American Native, and the Irish Cup. But excellent reasons exist for varying the sorts from one description of soil to another. A selection fit for growing where a good succession and variety of produce is wanted in general cropping, is the following:—The Early Manly, Fox's Seedling, Taylor's Fortyfold, the Leathercoat, the Red-nosed Kidney, the Irish Cup, and Bread-fruit.

The following Potatoes, which are but little known in this country, (and are perhaps more curious than useful,) have been grown in the garden of the Horticultural Society, and are thus described in their *Transactions*.

Golden Potato of Peru.—The tubers are small, irregularly shaped, but approaching to globular; their skin is pale yellow, and nearly smooth; the flesh is a rich yellow, much deeper than in any other old known sort. When cut through in the raw state, it appears of very close firm texture. When dressed, the Golden Potatoes are waxy, and of a peculiarly pleasant flavour. It is a late kind, and an indifferent bearer when grown in a strong soil, but tolerably productive in a lighter. Though very good, this anxiously expected root has not turned out of such extraordinary excellence for the table as was anticipated, nor answered the expectations which the extravagant accounts of travellers in South America had induced us to form of it.

Pied Golden Potato.—The tubers are irregularly rounded, with large eyes; the skin is pale yellow, striped with pale purple bands of various breadths. The flesh, both raw and when boiled, is exactly similar to that of the Golden Potato.

Asparagus Potato.—This Potato, whether it be dressed plain or with sauces, is in much estimation where it is known; its size prevents its being cultivated where productive crops are wanted; but its excellence for the table will always insure its growth in a garden where a variety of good esculents is required to be produced. The tubers are oblong, slender, varying in size, often from seven to eight inches long; skin of a light brownish white, inclining to pale red, smooth, with numerous distinct eyes. Flesh very pale, firm, and waxy, of superior flavour. It is a good bearer, but late in ripening; the eyes are also late in shooting, so that the stems are tardy in appearing above ground.

Mouse Potato.—Is of dwarf growth. The stems are dull purple, naked, with close joints; the petioles are short; the leaflets of a light green, ovate, small, and slightly undulated at the base, not numerous; the pinnules are few, and in general flat. The blossoms are few; the flowers pale lilac. The tubers are very small, oblong, slightly curved, and generally pointed at one end; their skin is smooth, with a few small eyes. Its flesh is very pale, almost white whilst raw; when dressed it is waxy and very good. A most abundant bearer, but late. From one of its names, it is probable it is of Scotch origin. In Germany it is said to be much cultivated by the curious. Its diminutive size will prevent its being grown, except as a matter of luxury. For all the purposes in cookery, in which small Potatoes are required, it will prove very acceptable, and perhaps be considered even a greater delicacy than the Asparagus Potato.

Pine Apple, or Cone Potato.—This singular root has received the above names from its peculiar formation. Below each eye is a projection, and as these are numerous and regularly disposed, it has some resemblance in shape to a Pine Apple, or more perhaps to the cone of a Stone Pine, after the scales have expanded by heat. It is not uncommon in curious collections, having been received from various persons since the year 1821. The tubers are oblong, middle-sized, generally pointed at one end, and with an irregular surface; the skin is smooth, yellow, with numerous eyes deeply sunk. In some of the roots the angles or protuberances are flattened, they have then a greater resemblance to a Pine Apple. The flesh when raw is of a pale yellow; when dressed, of good flavour and waxy. It is a moderate bearer, but very late.

Spanish Dwarf Potato is so very different in appearance from every other variety of Potatoe which is cultivated, that it attracts the attention of almost every person who sees it. It is so dwarf as not to exceed four inches in height; its stems rather spread on the ground, they are dark green, strong, branching, and hairy; the joints are very close; the leaflets dark green, hirsute, and slightly undulated; the petioles rather long; the pinnules numerous. It does not produce blossoms. The tubers are oblong, middle-sized, with few eyes, their skin yellow and smooth; the flesh yellow; when dressed they are tolerably good and mealy. The sets continue a long time dormant, and do not shoot so as to show above the surface of the ground till after some of the early varieties are fit for use. By this it escapes all injury from spring frosts. It is a moderate bearer, and late in ripening.



(One-third natural size.)

GESNERA HONDENSIS.

(Humboldt.)

THE HONDA GESNERA.

ALMOST every plant of this family is a beautiful object when properly cultivated; and the only reason why they are not now generally grown, is that they require a high temperature, such as that of a hot-house or a hot-bed. Among the free-growing herbaceous class of stove plants they are very conspicuous from their beauty.

Gesnera hondensis has a tuberous root, as have most of the species: its stems are herbaceous and hairy, and grow erect, about a foot or rather more in height; they are thickly set, with opposite spreading

acutely-ovate hairy leaves, from the axils of which the flowers are produced, sometimes solitary, but more frequently two or three together from the same axil; they are tubular and sub-ventricose, rather more than an inch long, of a yellow colour, but clothed nearly their whole length with shaggy bright red hairs, giving the flower quite a deep orange hue, yellow at the end from the absence of the hairs.

The plant has been long known to botanists, though it is new to our gardens. Humboldt originally discovered it at Honda, in New Granada; and from the same neighbourhood Mr. Purdie sent some of its tubers to the Royal Botanic Gardens at Kew, where they arrived during the early part of 1845. One of these, it appears, bloomed in December of the same year in the gardens of Syon house, the residence of the Duke of Northumberland.

It is remarkable for the profusion in which its blossoms are produced; and, so far as opportunities have yet been afforded of learning the most successful mode of treating it, there is reason to believe that it will admit of being bloomed at almost any period of the year, simply by retarding or accelerating its growth. This is a valuable property, and exists in plants generally far more than it is appreciated, though it is the very principle on which the gardener has to work when he is about to produce a constant succession of flowers. It might momentarily be thought that it would be more pleasing, as affording more variety, to keep a succession of flowers by means of different kinds of plants, rather than by lengthening the season of blooming in any particular plant, but it is seldom indeed that the appearance of a really beautiful plant becomes wearisome and ungrateful to the eye. A light rich loamy soil suits this genus well.

THE CARNATION AND PICOTEE,

WITH REMARKS ON RUNNING OF THEIR COLOUR.

AMONG the most improving as well as elegant florists' flowers, must be mentioned these beautiful subjects produced from wildlings of the least possible interest, and brought to a state which renders it not unlikely they will at last attain perfection, although we have placed before the floral world a model not very easily approached. The habit and treatment of these plants are so similar, that it is impossible to separate them until we come to the perfect flower, when the different style of bloom forces us to distinguish several of their properties, which are totally different to each other. The *Carnation* has stripes of colour through the body, as it were, of the petal; the *Picotée* has its most dense colour on the exterior edge, and when at its best, it radiates

from the edge to the body of the petal, without reaching far. In form, texture, and thickness, they should be alike; it is the marking which is so different, and essentially different, as to make the distinction between them. Of the many writers on these flowers, none have been able to decide upon the cause of one particular failing. When all that can be done has been done, and without our being able to arrive at any good reason for it, some flowers will lose their beautiful stripes and edges, and become flushed with colour all over, in the same way that a Tulip will go back to a breeder or self-colour, after blooming for years in the finest possible character; but there is this essential difference in the flowers,—the Tulip has first to break into stripes after coming a self-colour, and perhaps blooming so for years, whereas the Carnation begins flowering even the first year from the seed, in its beautiful variegated colours, and one is not prepared for the change to a worthless self-coloured bloom. The manner of its coming is as extraordinary as it is unaccountable. Plants reared from the same stool will come, some fine, some run and spoiled, although all have been treated alike, in every possible way. Nay, this is not all, for flowers on the same plant will come, one run and one fine; and, worse or more puzzling than this, a flower itself will be half run and half fine. This shuts out at once all the groundless notions that have been formed of its being caused by different treatment. By some it has been considered, that the more they are excited by strong manures the more apt they are to partially or wholly run; and, one of the most likely means of profitable investigation of the subject will be found in submitting the flowers, or rather the petals of flowers, in their different states, to a powerful microscope. Our readers do not want to be told that the petals of flowers are composed of atoms like so many bladders of liquid. Now, if these contain the colouring matter, and any particular rupture of these globules disperse it, we can easily account for the partial running of a single flower, or the running of all the flowers upon a plant, because the excited growth that would burst the globules of which the flowers are formed, would, if the colouring matter be there, disseminate that which originally formed, or would form, the dense or brilliant concentrated marks, over the whole texture, that is, among all the colourless globules of which the white parts seem composed, and so make a fainter hue over the whole mass; so also would the rupture of a few, in one part of the flower, spoil a portion or the whole of the petal in which the rupture took place; and in every stage of foulness, from very partial to very general, the effect is precisely that which would be caused by the

bursting of the globules of colour in the coloured parts, and its running all among the neighbouring, if not the whole, of the colourless atoms belonging to the part which would have been white. If this theory be admitted, there is no longer a mystery in the running of Carnations; and it is easy to suppose that the globules of which the coloured part of a flower is composed, may be too weak for a strong growth, and that they, like the blood-vessels in the human frame, would give way under particular excitement. The partial rupture of a flower, as, for instance, a single petal, is no more strange than the rupture of a single vessel in the lungs or the brain, and may be caused by too much excitement at that part, or by too little resisting strength. It is, in fact, no more than the bursting of a gooseberry or the cracking of a plum. It is only necessary for our readers, to submit the petals of a flower to the magnifying power that will exhibit its thousand globules of which it is composed as perfect as the roe of a herring, or the pulp of an orange, and they will no longer consider it wonderful that a Carnation runs in colour. All florists seem to fancy that the running of flowers is a consequence of growing them too rank, or, in other words, of exciting them too much,—a conclusion not at all unnatural; but it may be also the consequence of a predisposition to a peculiar weakness in the flower itself, or in the portions which form the predominating colours; and this is the more likely, because we find particular varieties much more liable than others. The study of the florist, therefore, should be to adopt with such varieties, a steady culture, avoiding as much as possible exciting compost, and thus, as far as possible, prevent unnecessary growth, which we do know is often fatal to highly coloured flowers. We wish more attention were paid by florists to this subject; it is impossible to conceive one more interesting, and surely there is not one which has given rise to such senseless speculations.

ANIMAL PHYSIOLOGY.*

IF anything can make converts to the necessity and the advantage of scientific pursuits, the labours of Mr. Carpenter must have this tendency. Inquiries that have been deemed presumptuous, and pronounced irreligious, from the very manner in which philosophers have conducted them, are in this gentleman's admirable treatises rendered tributary to the worship of the Creator, through his wondrous

* "Animal Physiology; a comprehensive Sketch of the Principal Forms of Animal Structure." By W. B. Carpenter, M.D., F.R.S., author of "General and Comparative Physiology," Lecturer on Natural History and Comparative Anatomy at St. Thomas's Hospital. London: Wm. S. Orr and Co. Paternoster-row. 1844.

works, and no one required more of that skill for which he is distinguished, than his treatise on the Physiology of Animal Creation. It is impossible to read and apply the information contained in this volume, without increasing our wonder, and fear and admiration of the Great First Cause, seeing, that subjects passed over without a thought,—animals upon which we have never bestowed a look, become, when viewed through the medium of the book under notice, as wonderful in structure as man himself. Mr. Carpenter, however, does not profess to touch upon theology. Indeed, in his Introduction, he all but disclaims it: he says—

“Whilst keeping in view the most important practical applications of the science of Physiology, he has not thought it desirable to pursue these too far; since they constitute the details of the *art* of preserving health, which is founded upon it, and which may be much better studied in a distinct form, when this outline of the science has been mastered. And, for the same reason, he has adverted but slightly to those inferences respecting the infinite power, wisdom, and goodness of the Great First Cause, which are more obvious, although, perhaps, not really more clear and valid in this science than in any other. Believing, as he does, that these inferences are more satisfactorily founded upon the *principles* than upon the *facts* of the science,—or, in other words, upon the general manifestations of *law* and *order*, than upon individual instances of design,—he has thought it the legitimate object of this treatise to lay the foundation for them by developing, so far as might be, the Principles of Physiology, leaving it to a special treatise on Natural Theology to build up the applications.”—Pp. vii. viii.

The subject is ably introduced, and it is demonstrated that it is impossible to neglect the study without forming a very inferior opinion of all around us. It has been truly said, “The proper study of mankind is man;” but, while we may feel interested in that which concerns our immediate wants, we are too apt to think carelessly, if we think at all, of things which affect the future. How little does he who enjoys a garden, contemplate the life he is constantly sacrificing to destroy the enemies of his plants and fruit! the destroyer of myriads of living creatures would be astonished if he saw and contemplated the framework and machinery which constitutes the meanest of his victims. All things of daily and hourly occurrence pass unheeded, while circumstances which are strange, though of far less importance, excite our wonder, our admiration, and our fears. As the author observes in his Introduction—

“We are much more apt to seek for explanations of phenomena that rarely present themselves than of those which we daily witness. The comet excites the curiosity of the vulgar, whilst the movements of the sun, moon, and planets are regarded by them as things of course. We almost daily see vast numbers of animals, of different tribes, in active life around us: their origin, growth, movements, decline, death, and reproduction are continually taking place under our eyes; and there seems to common apprehension nothing to explain, where every thing is so apparent. And of man, too, the ordinary vital actions are so familiar, that the study of their conditions appears superfluous. To be born, to grow, to be subject to occasional disease, to decline, to die, is his lot in common with other animals; and what knowledge can avail (it may be asked) to avert the doom imposed on him by his Creator?”

“In reply to this, it is sufficient to state, that *millions* annually perish from a neglect of the conditions which Divine wisdom has appointed as requisite for the preservation of the body from fatal disease; and that millions more are constantly suffering pain and weakness that might have been prevented by a simple attention to those principles which it is the province of Physiology to unfold. From the moment of his birth, the infant is almost entirely dependent upon the condition in which he is placed for the future development of his frame; and it depends in great part upon the care with which he is tended, and the knowledge by which that care is guided, whether he shall grow up in health and vigour of body and mind, or become weakly, fretful, and self-willed, a source of constant discomfort to himself and to others; or form one of that vast proportion, whose lot it is to be removed from this world before infancy has expanded into childhood.”—Pp. 1, 2.

Happily does the author prepare the student for wonders that he will discover, and few writers contrive to put so much information into so little space. In a sort of summary of extraordinary facts, which pave the way for every thing, he says—

“The diffusion of animal life is only one degree less extensive than that of vegetable existence. As animals cannot, like plants, obtain their support directly from the elements around, they cannot maintain life where life of some kind has not preceded them. But vegetation of the humblest kind is often sufficient to maintain animals of the highest class. Thus the lichen that grows beneath the snows of Lapland is, for many months in the year, the only food of the rein-deer, and thus contributes to the support of human races, which

depend almost solely upon this useful animal for their existence. No extremes of temperature in our atmosphere seem inconsistent with animal life. In the little pools formed by the temporary influence of the sun upon the surface of the arctic snows, animalcules have been found in a state of activity; and the tracts of red snow, which frequently cover the surface of arctic and alpine regions for miles in extent, are formed, not merely by the little cryptogamic plant elsewhere described (*Veget. Phys.* § 48), but by incalculable multitudes of certain species of animalcules, and by the eggs of other kinds. And the ocean of those inhospitable regions is tenanted, not only by the whales and other monsters which we think of as their chief inhabitants, whose massive forms are only to be encountered 'few and far between,' but by the shoals of smaller fishes, and inferior animals of various kinds, upon which they feed, and through the vast fleets of which the mariner sails for many miles together.

"On the other hand, even the hottest and most arid portions of the sandy deserts of Africa and Asia are inhabited by animals of various kinds, provided that vegetables have existed there. The humble and toilsome ants make these their food, and become in turn the prey of the cunning ant-lion and of the agile lizard; and these tyrants are in their turn kept under by the voracity of the birds which are adapted to prey upon them. The waters of the tropical ocean never acquire any high temperature, owing to the constant interchange which is taking place between them and those of colder regions; but in the hot springs of various parts of the world, we have examples of the compatibility of even the heat of boiling water with the preservation of animal life. Thus, in a hot spring at Manilla, which raises the thermometer to 187 degrees, and in another in Barbary, whose usual temperature is 172 degrees, fishes have been seen to flourish. Fishes have been thrown up in very hot water from the crater of a volcano, which, from their lively condition, was apparently their natural residence. Small caterpillars have been found in hot springs of the temperature of 205 degrees; and small black beetles, which died when placed in cold water, in the hot sulphur baths of Albano. Intestinal worms within the body of a carp have been seen alive after the boiling of the fish for eating; and the inhabitants of some little snail-shells, which seemed to have been dried up within them, have been caused to revive by placing the shells in hot water for the purpose of cleaning them.

"The lofty heights of the atmosphere, and the dark and rayless depths of the ocean, are tenanted by animals of beautiful organization and wonderful powers. Vast flights of butterflies, the emblems of summer and sunshine,

may sometimes be seen above the highest peaks of the Alps, almost touching with their fragile wings the hard surface of the never-melting snow. The gigantic condor or vulture of the Andes has been seen to soar on its widely-expanded wings far above the highest peak of Chimborazo, where the barometer would have sunk below ten inches. The existence of marine fishes has been ascertained at a depth of from 500 to 600 fathoms; and in the Artesian well lately sunk in Paris to a depth of about 1800 feet, the water has recently brought up a number of small black fishes, which, being without eyes, seem to have been produced in the depths from which it springs."—*Pp.* 10—12.

The author, in his first chapter, expatiates on the vital operations of animals, and the instruments by which they are performed. We are then introduced to a general view of the animal kingdom, which is described as in five divisions, and beautifully illustrated with engravings, showing the internal and external structure of some of the most important in each class. The next chapter treats of the nature and sources of animal food; and here the author explains fully the various modes of procuring it, the effect of the food upon the different species, the animals that live on each other, and takes a general review of all the important tribes, down to the lowest order of animal creation. From this he proceeds to discuss the process of digestion and absorption; and there are engravings of the digestive organs of various animals, from man down to the beetle. We come now to a description of the blood and its circulation, in which the arterial systems in man and inferior animals are well illustrated; and the next chapter explains the act of respiration, and its effects on the system, or rather, the part which it performs in animal life. Then follows, successively, remarks on secretion, and the general purposes of the secreting process, the nutritive operations, animal luminousness, heat, and electricity. The functions of the nervous system, with illustrations, occupy a large portion; and not much less is taken up with an interesting review of the various senses, the power of motion, nature of the voice, and instinct, and intelligence; and deeply interesting is the general review of the habits and architecture among the various tribes, many of the most remarkable being brought forward with appropriate illustrations, showing not only the numerous modes of building their habitations, but their contrivances to procure and preserve food, and various other manifestations of intelligence. The comparison between man and other animals is curious, and the conclusion of the chapter is worth quoting. He says—

"It appears, then, that the mind of man differs from that of the lower animals rather as to the *degree* in which the reasoning faculties are developed in him than by anything peculiar in their *kind*. Among the more sagacious quadrupeds, it is easy to discover instances of reasoning as close and as prolonged as that which usually takes place in early childhood; and it is only with the advance of age, and the maturity of the powers, that the superiority of man becomes evident. There is a tendency, however, by which he seems to be distinguished from all other animals;—this is, the disposition to believe in the existence of an unseen but powerful Being, which seems never to be wanting (under some form or other) in any race or nation, although (like other natural tendencies) it may be defective in individuals. Attempts have been made by some travellers to prove that particular nations are destitute of it; but such assertions have been based upon a limited acquaintance with their habits of thought, and with their outward observances; for there are probably none that do not possess the idea of some invisible Power external to themselves, whose favour they seek, and whose anger they deprecate, by sacrifice and other religious observances. It requires a higher mental cultivation than is commonly to be met with among savage races, to conceive of this Power as having a *spiritual* existence; but it appears, from the reports of missionaries who have laboured to spread Christianity amongst the heathen, that an aptitude or readiness to receive this idea is rarely wanting; so that the faculty is obviously present, though it has not been called into operation.

"Closely connected with this tendency to belief in a Great Unseen Power, is the desire to share in His spiritual existence, which seems to have been implanted by the Creator in the mind of man, and which is one of the chief natural arguments for the immortality of the soul,—since it could hardly be supposed, that such a desire should have been implanted by our beneficent Maker if it were not in some way to be gratified. By the immortal soul, the existence of which is thus guessed by man, but of whose presence within him he derives the strongest evidence from revelation, man is connected with beings of a higher order, amongst whom intelligence exists, unrestrained in its exercise by the imperfections of the bodily frame, with which it is here connected, and by which it here operates. Such views tend to show us the true nobility of man's rational and moral nature, and the mode in which he may most effectually fulfil the ends for which his Creator designed him. We learn from them the evil of yielding to those merely animal tendencies,—'those fleshly lusts which

war against the soul,'—that are characteristic of beings so far below him in the scale of existence, and tend to degrade him to their level; and the dignity of those pursuits, which, by exercising his intellect, and by expanding and strengthening his loftier moral feelings, raise him towards beings of a higher and purer order. But even the loftiest powers and highest aspirations of which he is at present capable, may be regarded as but the germs or rudiments of those more exalted faculties which the human mind shall possess when purified from the dross of earthly passions, and expanded into the comprehension of the whole scheme of creation, the soul of man shall reflect, without shade or diminution, the full effulgence of the love and power of its Maker."—Pp. 541—543.

The last chapter in the volume treats of reproduction, and here he touches upon the close approximation of animals and vegetables in the mode of continuing the species. He says—

"It has been elsewhere shown (Veget. Phys. chaps. ix. xii.) that, in the vegetable kingdom, there are two distinct modes by which the propagation of most kinds of plants may take place—the extension of the parent structure into new portions, which are independent of each other, and which can maintain their lives when separated from it, and the formation of certain bodies, the development of which does not commence until they have been cast off from the parent, these being nothing else, from the first, than the germs of new individuals. Now the bodies of the first class are known as *leaf-buds* in the Flowering Plants, and *gemmæ* among the Cryptogamia; many of which last, as the *Marchantia* (Veget. Phys. § 33), are furnished with a peculiar means of producing them. These buds may be developed in connexion with the parent structure, and may continue to form a part of it; or they may be removed from it (as in the processes of budding, grafting, &c.), and may be developed into new individuals. On the other hand, the bodies of the second class are known as *seeds* among the Flowering Plants, and as *spores* among the Cryptogamia. From the very first, these are destined to produce new individuals; and their development does not take place until they are cast off from the parent, which frequently (as in *annual* plants) dies as soon as it has matured them and set them free. Both these modes of reproduction exist in the animal kingdom; but the former is confined to its lowest tribes; and among these, we not only find a tendency to multiplication by buds, but an extraordinary power of regenerating lost parts, and even of reproducing the whole structure from a small portion of it."—P. 545.

In the course of this investigation, the parallels are drawn with great minuteness nearly all through the process of reproduction, in a manner equally instructive and inviting. Nor is there anything repulsive in the various gradations of nature's progress, as developed in the pages before us. The singularity of the means by which many of the lower order of animals continue their species by dividing themselves, the remarks on those species which have been considered as the doubtful link between animal and vegetable creation, afford the highest interest; and the lover of natural history will peruse any page of the work with great satisfaction. As another instance of the tone of the work, which to those who contemplate its perusal by the younger branches is important, we cannot omit the concluding section:—

"The unity of plan," says the author, "which is visible through the whole animal kingdom, is nowhere more remarkable than in the function of which an outline has now been given. We have seen that, however apparently different, the essential character of the reproductive process is the same in the highest animal as in the lowest. It has been shown that the development of the highly-organized body of man,—which is to serve as the instrument of those exalted faculties, by the right employment of which he is made 'but a little lower than the angels,'—commences from the same starting point with that of the meanest creature living: for even man, in all the pride of his philosophy, and all the splendour of his luxury, was once but a single cell, undistinguishable, by all human means of observation, from that which constitutes the entire fabric of one of the simplest plants. And when the physiologist is inclined to dwell unduly upon his capacity for penetrating the secrets of nature, it may be salutary for him to reflect that,—even when he has attained the furthest limits of his science, by advancing to those general principles which tend to place it on the elevation which others have already reached,—he yet knows nothing of those wondrous operations, which are the essential parts of every one of those complicated functions by which the life of the body is sustained. Why one cell should absorb,—why another, that seems exactly to resemble it, should assimilate,—why a third should secrete,—why a fourth should prepare the reproductive germs,—and why, of two germs that seem exactly similar, one should be developed into the simplest zoophyte, and another into the complex fabric of man,—are questions that physiology is not likely ever to answer. All our science is but the investigation of the mode or plan on which the Creator acts; the power which

operates is infinite, and therefore inscrutable to our limited comprehension. But when man shall have passed through this embryo state, and shall have undergone that metamorphosis, by which every thing whose purpose was temporary shall be thrown aside, and his permanent or immortal essence shall alone remain, then, we are encouraged to believe, his finite mind shall be raised more nearly to the character of the Infinite; all his highest aspirations shall be gratified, and never-ending sources of delightful contemplation shall be continually opening to his view. The philosopher who has attained the highest summit of mortal wisdom, is he who, if he use his mind aright, has the clearest perception of the limits of human knowledge, and the most earnest desires for the lifting of the veil that separates him from the Unseen. He, then, has the strongest motives for that humility of spirit and purity of heart, without which, we are assured, none shall see God."—Pp. 567, 568.

The volume is got up with great taste; the embellishments are of the highest class of engraving, and finely printed: indeed, it is altogether worthy of the series of volumes destined to win thousands over to the ranks of rational science, which, as promulgated in these works, is, in no instance, inconsistent with reason, common sense, and practice.

HARDY ANNUALS.

THE following selection of Hardy Annuals is very suitable for the open borders, and may be sown any time from the end of March to the beginning of June; the height, colour of bloom, and time of flowering will be a sufficient guide as to the situation they should occupy in the gardens.

Adonis autumnalis, (Flos Adonis, or Pheasant's Eye).—Height 1 foot; flower crimson; June and August.

Amaranthus caudatus, (Love lies Bleeding).—Height 2 feet; flowers crimson; June to September.

Aster tenellus, (Slender Aster).—Height 6 inches; flowers varying in colour from nearly white to deep lilac; August and September.

Cacalia coccinea, (Scarlet-flowered Cacalia).—Height 1 foot; flowers deep orange or scarlet; August and September.

Calendula pluvialis, (Cape Marygold).—Height 1 foot; flower white and purple; June and August.

Calliopsis bicolor, (Two-coloured Fair-eye).—Height 2 to 3 feet; flowers yellow, with a dark brown centre; from July till October.

Callistemma hortensis, (China Aster).—Height 1 foot; flowers various; August and September.

Campanula Lorei, (Lore's Bell-flower.)—Height 1 foot; flowers various; August and September.

Campanula speculum, (Venus's Look-glass.)—Height 1 foot; flowers blue; June and July.

Clarkia pulchella, (Pretty Clarkia.)—Height 1½ feet; flowers plum-colour; June and September.

Collinsia bicolor, (Two-coloured Collinsia.)—Height 1½ feet; flowers lilac and white; June and July.

Collinsia grandiflora, (Large-flowered Collinsia.)—Height 1 foot; flowers purple and blue; June and July.

Collomia coccinea, (Scarlet Collomia.)—Height 1 foot; flowers dull scarlet; July.

Collomia grandiflora, (Large-flowered Collomia.)—Height 1 foot; flowers buff or dull orange; July.

Convolvulus tricolor, (Convolvulus Minor.)—Height 1 ft.; flowers blue; June to August.

Delphinium Ajacis humile, (Dwarf Rocket Larkspur.)—Height 1 foot; flowers various colours; June to September.

Erysimum Peroffskianum, (Peroffski's Erysimum.)—Height 1½ foot; flowers deep orange; June and September.

Eschscholtzia crocea, (Saffron-coloured Eschscholtzia.)—Height 1 foot; flowers deep orange; July and August.

Eucharidium concinnum, (Neat Eucharidium.)—Height 1 foot; flowers light rose or pink; July.

Eutoca viscida, (Viscid Eutoca.)—Height 1 foot; flowers deep blue, with a white centre; July and August.

Eutoca Wrangeliana, (Baron Wrangel's Eutoca.)—Height 1 foot; flowers dull dark lilac; June and July.

Gilia tenuifolia, (Slender-leaved Gilia.)—Height 1½ foot; flowers pink; July.

Gilia tricolor, (Three-coloured Gilia.)—Height 1 foot; flowers lilac, with a dark eye, and blue anthers; June and July.

Godetia bifrons, (Two-spotted Godetia.)—Height 2 feet; flowers rosy lilac, with deep crimson spots on each petal; July and August.

Godetia Romanzowii, (Romanzow's Godetia.)—Height 1½ foot; flowers bluish-purple; June and October.

Godetia-rosa alba, (Rose and White Godetia.)—Height 1 foot; flowers rose and white; June and October.

Gypsophila elegans, (Elegant Gypsophila.)—Height 9 inches; flowers whitish; June and July.

Helichrysum macranthum, (Large-flowered Everlasting.)—Height 2 feet; flowers white, with rose tips; from August to October.

Helichrysum bracteatum, (Yellow Everlasting.)—Height 2 feet; flowers yellow; from August to October.

Iberis umbellata, (Normandy Candy-tuft.)

—Height 1 foot; flowers purple; June and July.

Iberis coronaria, (White Rocket Candy-tuft.)—Height 1 foot; flowers white; June and July.

Ipomaea purpurea (Convolvulus major), Twiner.—Height 5 feet; flowers various colours—some white and blue striped; July to September.

Lathyrus odoratus, (Common Sweet Pea.)—Height 3 feet; flowers various; June to October.

Lavatera trimestris, (Three-month Lavatera.)—Height 3 to 4 feet; flowers red and white; June to August.

Leptosiphondensiflorus, (Close-flowered Leptosiphon.)—Height 1 foot; flowers lilac; June.

Lupinus lutea, (Yellow Lupin.)—Height 1½ feet; flowers yellow; June and September.

Lupinus nanus, (Dwarf Lupin.)—Height 6 inches; flowers blue; May to October.

Lupinus Cruikshankii, (Cruikshank's Lupin.)—Height 3 feet; flowers white, blue, and yellow; June and August.

Lychnis lata, (Dwarf Lychnis.)—Height 9 inches; flowers rose colour; June.

Malcomia maritima, (Virginian stock.)—Height 9 inches; flowers lilac and white; June to October.

Malope grandiflora, (Large-flowered Mallow.)—Height 3 feet; flowers rose colour; June to October.

Nemophila atomaria, (Dotted Nemophila.)—Height 1 foot; white flowers, dotted all over with small specks; June.

Nemophila discoidalis, (Black-disked Nemophila.)—Height 1 foot; flowers of a deep chocolate, almost black, with a narrow white edging; June.

Nemophila insignis, (Showy Nemophila.)—Height 9 inches; flowers blue and white; June to October.

Nolana prostrata, (Prostrate Nolana.)—Height 6 inches; lilac-blue flowers; July and August.

Papaver somniferum fl. pleno, (Double Poppy.)—Height 2½ feet; flowers various; July.

Reseda odorata, (Mignonette.)—Height 9 inches; flowers light brown; June to November.

Saponaria Calabrica, (Calabrian Soapwort.)—Height 9 inches; flowers pink; July and August.

Silene pendula, (Pendulous Catchfly.)—Height 1 foot; flowers pink; June and July.

Silene Armeria, (Lobel's Catchfly.)—Height 1 foot; flowers pink; June and August.

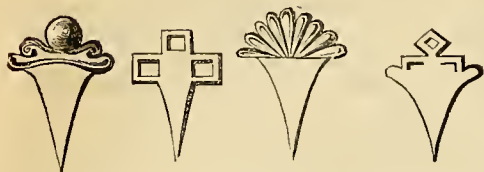
Tagetes tenuifolia, (Slender-leaved Marigold.)—Height 1 foot; flowers yellow; July to October.

Tolpis barbata, (Yellow Hawkweed.)—Height 1 ft.; flowers yellow; June and August.

Tropaeolum majus, (common Nasturtium.)—Flowers large, orange-coloured; from July till September.

Viscaria oculata, (Dark-eyed Viscaria.)—Height $1\frac{1}{2}$ feet; flowers lilac, with dark eye; July and August.

Xeranthemum annuum, (Purple Everlasting.)—Height 2 feet; flowers purple; August.



GLASS EDGINGS FOR FLOWER-BEDS.

THE cheapness and durability of glass suggests its application to many purposes for which it has hitherto been too expensive, and among other subjects to which it would be well applied, garden ornaments are not the least important. There is but one objection to its application to a thousand things, and that is, the fragile nature of the material; yet the cheapness of it will enable the manufacturer to apply it in such quantity, that sufficient strength may be given to it for almost any purposes. The edgings of flower borders, for instance, could be made with great facility in a variety of patterns, and they may be so contrived as to be easily placed round the beds in circular or square, or any other form, by making the pattern not too large, and each separate piece under a foot in length of pattern. By these short lengths, or even shorter, any figure can be made without difficulty, and the mode of fixing them could be by spikes of its own material. These ornaments could be cast in moulds, and supplied at a cheap rate, and a neat design is all that would be required. It would not be desirable to have them cast in great lengths, because the chances of breaking would be increased; and in case of a break a longer portion would be damaged. On every account, then, we recommend the short single ornaments, of at most a foot in length. It is easier to manage any figure; they are less liable to damage, and, when spoiled, cost less. In geometrical gardens they should be still narrower, because the figures of the beds are more contracted, and even a foot length of pattern would be found unmanageable. With



regard to colour, they need hardly be any other than that of wine-bottles, for scarcely any colour would be more in keeping with the beds and their contents. The efficacy of these glass edgings, and their superiority over the best edging that could be grown, will

be manifest, because, once made, they remain in the same state for an age; in fact, until they are disturbed; and their advantage over wood, or any painted material, is obvious, as they are not affected by weather or wear. They would always look bright and clean under any circumstances. Upon the whole, then, we can hardly imagine a subject more likely to be worth the attention of glass-workers; for a little fancy exercised in the pattern would at once render the material and its general application popular. The annexed sketches are rough, and are only intended to give an idea of our notions as to pattern.



THE LILY OF THE VALLEY.

WHETHER it be referrible to the simple elegance, or to the agreeable fragrance of this little native plant, or not, certain it is that there is scarcely any flower more universally admired. At the natural period of the year, they are plentiful enough in their native localities, growing in copses, woods, and thickets on a loamy soil; and occasionally in shady places, in shrubberies, and amongst clumps of trees, we meet with them in tolerable profusion in a cultivated state. Where there is a moist loamy soil and shade, there is little difficulty, if, indeed any, attending their growth; and, therefore, this part of the subject may be passed over, with the hint, that they *might much oftener* be met with in situations such as those alluded to, without being liable to offend the eye: in a word, much as they are admired and cultivated, there is yet room for greater admiration and more extensive cultivation. But this refers to May and June. Lilies of the Valley all the winter! Ay, then they are doubly valued, because, added to their other recommendations, they are less common then. They may be had in flower during all the winter, and that by the aid only of a forcing-house and a little management. It matters little whether the forcing-house be a single garden frame, or a more imposing erection: the management required is not such as may be called difficult; it is better characterised as attentive.

With the blossom of the Lily of the Valley—in scientific language called *Convallaria majalis*—every one must be familiar; but it may be useful in pointing out its proper treatment, to explain the general character of the plant. Beneath the surface, then, this *Convallaria* consists of slender, wiry, creeping stems, and long, branched, matted fibrous roots: the underground stems throw out at intervals whorls of these fibrous roots, which spread on all sides; and upwards from the same point

risers a thickened bud, from which at the proper season spring the leaves and flowers. Now, all the success of blooming the plant consists in perfecting these buds; and when they are properly formed, the flowers may be developed at any time by the application of heat.

They may be forced in pots of any size, from six inches to a foot in diameter; but when convenience is limited, the smaller size will be preferable. To prepare the plants, choose a shady, moist (not wet) situation, where the soil is as near a rich holding loam as may be;—a shady border, behind a south wall, where the soil has been made for pears, and similar fruit trees, is just the very place for them. Prepare the soil for them early in March, by stirring it up either with a fork or spade; draw off with a hoe or rake about two inches of the surface, and then mark the ground out in circular patches of the size of the pots which are determined to be used: this is easily done by inverting one of the pots and pressing its rim on the soil: the patches may be near together, for the plant is but a small grower. Take a quantity of the matted roots, and separate them into the single buds with the attached fibres already alluded to: place these buds within the circles marked out on the ground; for a six-inch pot, from six to eight may be planted, and so in proportion for pots of larger size. When they are all planted, return the two inches of soil, putting it on carefully so as not to displace any. Cover the surface with a top dressing of rotten manure, an inch or two in thickness; or use liquid manure during their growing season: keep them clear of weeds. The plants ought to grow here through the second summer, in order to get strength to bloom finely; and this will be aided by picking off the blooms (not the leaves) as soon as they appear from the plants during the two seasons. About October they may be potted for forcing. A fresh plantation should be made in this way annually; and a portion being also taken up yearly for potting, the stock may be perfectly adjusted to the demand for them.

In potting them proceed thus:—the pots must be drained well, with any coarse material which will pass off the water; moss, rather long dung, tree leaves—either fresh or half decayed, corks, cinders, or charcoal—any of these will do. Take a handful and throw into the bottom of the pots, and use pure mellow loam for potting if it can be afforded; if not, the common soil of the border they have grown in, will do. Take up the circular patches whole, with the spade or trowel, and pot them so that the crowns or buds may be an inch beneath the surface; work the soil well in among the fibres and mass of earth when potting: a copious water-

ing assists to do this. When they are potted, they require to be put in a sheltered place, in the way potted Hyacinth roots are treated, and covered over with four or six inches of old rotten tan, sawdust, or coal ashes; and from this store they are to be removed in succession as they are required for forcing. They will take from a month to six weeks to force into flower: in the earlier part of the season, which is also the depth of winter, they will take the longest time to get them into bloom. They require a temperature of 75 deg. to 80 deg. of bottom heat, and an atmospheric heat of 60 deg. They are best covered with two or three inches of old tan, &c. when placed on the bottom heat; and, when the buds come through this, they may be moved out from this covering, and kept for a week or so in the shade, and then taken to a lighter part of the house, and set in pans of water. When in flower, they may be removed to the sitting-room, or any other warm situation, where they may be required. Where there is no forcing-house, the same success will follow, if they are placed in a frame where the heat is regulated to the degree already named; and as they grow up, they may be removed to a warm room, and finally to a light window. In fact, when they are brought into bloom, the object is to enjoy them, by placing them just where they are required, which, however, must not be a cold place.

When the bloom is over, the roots may be protected slightly by any available means until March, when they may be planted out again for young blooming stock; and after two seasons' growth in this situation, they may again be forced. In planting out these forced plants, as well as in their treatment after the bloom is passed, it is very important to preserve the foliage without injury.

There are some varieties among the Lilies of the Valley, but they are hardly to be compared with the simple wild flowers. A variety, called *flore-pleno*, has double white flowers; and one called *rubra*, has the flowers flesh-coloured, but they are both very scarce plants. The purity of the white in the wild plant, is one of its desirable qualities; and its bell-shaped form is little improved in appearance, by the multiplication of its parts.

THE RIBES FAMILY.

THE members of this family, cultivated till within a few years, made little or no noise, and hardly excited any attention; but the introduction of *Ribes speciosum* and *sanguineum*, and the raising of many varieties from seed differing in the colour of the bloom, rendered it at once a favourite tribe; and we shall now be constantly adding to the number and variety

of the kinds patronized in gardens. The *Ribes speciosum* was, we believe, introduced by the Horticultural Society, and many hundreds of plants were distributed from the nurseries, before any of the purchasers saw a bloom: indeed, the flower is so inconspicuous, that, probably had the nurserymen shown any in bloom, the sale would have been stopped at once; whereas, while the botanists were lauding it to the skies, and the bloom was carefully kept from sight, the sale was rapid, and for a long time constant. The *Ribes speciosum* is a variety or species with the characteristics of the gooseberry-tree; the leaves smaller; the plant weaker; the bloom red but small, and greatly disappointing to those whose notions of its grandeur were derived from the sellers themselves. Nevertheless, as there were, when it was well grown, as many flowers as leaves, it was a favourite with many to the last, and even now forms a pretty member of the *Ribes* family.

Ribes sanguineum is after the habit of the currant, and, it must be confessed, one of the prettiest of the flowering shrubs. The branches of flowers hang like currants. The leaves are like the currant but smaller, and it forms a bush of the same appearance, but not so strong in the wood. Of this there are many seedling varieties; they have already been produced from white to dark crimson almost every shade, and form a rich and varied group.

Ribes aurea is a more elegant shrub, but by no means so prolific of bloom: still, the pale yellow flowers hanging in loose bunches with longer footstalks, make a pretty appearance among the flowering shrubs. The leaves of this are also like the currant, but much smaller and more elegant. It is a looser growing shrub; and except grouped with others, where the yellow flowers form a contrast, is not so conspicuous as to make any figure of consequence. By selecting some of the most striking of the varieties of *sanguineum*, such as white, pink, dark rose, and crimson; then the yellow one and *Ribes speciosum*; and grouping them tastefully, much may be done towards rendering them highly ornamental. They all strike freely from cuttings and layers. They may be cut off or laid down any time, from the fall of the leaf to the period of growing again: so also, the cuttings may be put in at a proper distance in nursery-beds, six inches apart in the rows, and a foot from row to row. The layers may remain on the trees until the autumn, when they may be cut off, if well rooted, and be planted either in beds to increase in size, or at once in the borders or places where they are to remain. When the cuttings have remained in the first bed until the autumn, they may be placed anywhere, either in a fresh bed, wider apart, or in bor-

ders where they are to bloom; but it is better to keep them one more year in a bed. In the spring, before the buds are swelled, they may be cut down to within three or four eyes of the ground, if they are single stems, or each branch to within two eyes of the main stem if they are in branches; and, in this case, all weakly and thin shoots must be taken clean away. In selecting cuttings to be put in the open border, treat them the same as the common currant-bush, for they are quite as hardy, though as they bloom very early in the spring, a sharp frost has more effect upon their opening flowers, than is consistent with their tender and brilliant bloom. This, however, does not affect the cuttings, which should be cut off about six inches long, so that one branch might be made into half a dozen cuttings, if it were a strong one: these should be half in the ground and half out, and the earth well pressed against their sides, otherwise they would dry up and wither. The pruning of these shrubs may be left entirely to the grower's fancy: they may be made close dwarf-bushes, by cutting all the shoots down, every year, to three or four eyes; but as they do not fear the knife, the cultivator may almost shape them as he likes. The *Ribes speciosum* wants cutting like the gooseberry-bush, leaving the pendent branches here and there the full length, for the bloom will extend the whole length of the shoot as thick as the leaves themselves. This plant was at first treated as a more tender exotic than it is, and the cuttings were carefully struck under a hand-glass. This may be done now or not, just as the cultivator chooses; but we never found any difficulty in striking them, as we should the common gooseberry.

THE PRINOS, OR WINTER BERRY.

THESE are small shrubs, botanically allied to the Holly, and, for the most part, interesting in cultivation. There are some species deciduous,* and others are evergreen.

Prinos ambiguus, (the ambiguous Winter Berry.)—A deciduous shrub, growing four or five feet high; found in sandy wet woods and swampy places from New Jersey to Carolina. The leaves are oval, tapering to both ends, quite smooth, and saw-edged. The flowers are small and white, borne in July and August, and succeeded by smooth round small red berries. It is sometimes called *Cassine caroliniana*.

Prinos atomarius, (the atom-bearing Winter Berry.)—This is a small evergreen under-shrub, with oval, coriaceous leaves, wedge-shaped at the base, and acuminate at the tip, and bearing on the under side nume-

* That is, shedding their leaves in winter.

rous minute excrescences, which give rise to the specific name. The flowers are solitary, white, produced in July and August, and succeeded by dark-coloured berries. It grows in woods and on the banks of rivers in Georgia.

Prinos coriaceus, (the coriaceous or leathery-leaved Winter Berry.)—This is a tall evergreen shrub, very nearly allied to the last, but with entire leaves, and more numerous flowered corymbs. It is found in sandy woods, near the margins of rivers, in Georgia. The flowers are white.

Prinos deciduus, (the deciduous Winter Berry.)—This is a deciduous shrub, smaller than any of the preceding, seldom exceeding four feet in height. It is a native of rocky, shady places on the banks of rivers in Virginia, and thence to Georgia. The leaves are elliptic-lanceolate, tapered to the petiole, slightly saw-edged, and with the midrib downy beneath. The flowers are small, white, produced in June and July, and succeeded by large crimson berries. It is also called *P. prinoides*.

Prinos dioicus, a native of the island of Montserrat, is supposed to be nearly or quite hardy, but is not yet introduced.

Prinos dubius, (the doubtful Winter Berry.)—This is the *P. ambiguus* of some authors; it is a deciduous shrub, in the way of and allied to *P. verticillata*, but with larger red berries, and leaves acuminate at both extremities. It is a low tree, from sandy woods and the borders of swamps in different parts of North America, growing to the height of twelve feet, and flowering in July and August.

Prinos glaber, (the glabrous Winter Berry.)—This is a handsome small evergreen shrub. It grows four or five feet high, occurring in the sandy, shady woods of North America, from Canada to Florida. The leaves are lanceolate and leathery, quite glossy. The flowers are produced mostly in bunches of three together; they are small, white, and open in July and August, and are succeeded by black berries, which in Jersey are called Ink-berries. The bush generally assumes an even ovate figure, densely clothed with leaves.

Prinos lanceolatus, (the lance-leaved Winter Berry.)—This is a deciduous shrub, a native of the lower districts of Carolina and Georgia. It attains about the same size as the preceding one. The leaves are lanceolate, very remotely serrated, and smooth. The flowers are white, and the berries scarlet, and small in size.

Prinos levigatus, (the smooth-leaved Winter Berry.)—A deciduous North American shrub, growing about eight feet high, and found on the Alleghany mountains. The leaves are lanceolate-acuminate, saw-edged and glabrous, (or smooth); the flowers small,

white, axillary, and solitary; the berries are large, and of a dark-red colour.

Prinos lucidus, (the shining Winter Berry.)—This is an ornamental deciduous shrub, with ovate quite entire leaves, and small white flowers, which are produced in June, and are succeeded by handsome crimson berries, which have a very ornamental appearance. It is a native of North America, and is known, also, under the name of *Ilex canadensis*, and *Nemopanthes Canadensis*.

Prinos verticillatus, (the whorled Winter Berry.)—A deciduous shrub, growing about eight feet in height, and furnished with oval-acuminate, saw-edged leaves, downy beneath, and fascicles of small white flowers from the axils of the leaves; produced from June to August, and succeeded by reddish purple berries. It is a native of various parts of North America, but always in damp places, as the margins of ditches, wet woods, &c. It is also known as *P. prunifolius* and *P. padifolius*.

The different species of *Prinos* grow freely in any tolerably good free garden soil, such as is prepared in most places for the growth of ornamental shrubs. A sandy loam is, however, most congenial to them; and there can be no doubt but that a situation which possesses the natural advantages of being damp (not for want of drainage) and cool, would be found to be most in accordance with their requirements. They may be propagated by seeds, by cuttings, or by layers, in the same way as the allied plants, but, like many other families of ornamental shrubs, they are not sufficiently called for, to become propagated to any great extent, a plant being now and then only asked for in the nurseries. The young plants would be best raised in seed-pans, so as to be the more readily protected to a slight extent in the winter, when in their infant stages, but they should be planted out after they are twelve months old. Such plants as these, which scarcely endure our most rigorous winters, are much assisted by covering the soil about them with a few inches in thickness of half-decayed leaves, or some littery material. Being of limited growth, they seldom require to be pruned in any way.

THE LEDUM.

THE *Ledum* is a genus or family of small shrubs, belonging to the natural order *Eriaceæ*, and ranking among those known by the title of American shrubs. The name *Ledum* is derived from *ledon*, the name applied by the ancients to a plant which yielded the substance called *ladanum*, and which is now called *Cistus Ledum*; the modern *Ledum* is so named from the resemblance, though distant, between these plants and that of the ancients.

Like other plants of this character, the *Ledums* grow most freely in a soil consisting principally of peat or heath-soil; the situation, moreover, should be moist and cool, though not subject to an excess or stagnation of water during the winter. Under such conditions of culture they grow freely; and as they bloom profusely, they are very ornamental. They are readily propagated by layers.

The following are the names of the species which are cultivated in British gardens:—

Ledum canadense, (the Canadian *Ledum*,) is a small, evergreen, shrubby plant, growing from three to six inches in height; the leaves are ovate, whitish beneath; the flowers are white, large for the size of the plant, and disposed in terminal umbellate corymbs of considerable size; they consist of five small petals, forming a star-shaped flower, with the stamens standing out on filaments as long as the petals. It flowers in April and May. Native of swamps in Canada.

Ledum latifolium, (the broad-leaved *Ledum*, or Labrador-tea,) is a small evergreen shrub, growing from two to four feet high; the leaves are linear-oblong, with the margins folded back, and clothed with a rusty downiness beneath; the flowers are large, white, in compact round heads, and very showy; they bloom in April and May. It is a native of mossy swamps in Canada; and of Greenland, Labrador, Newfoundland, and other parts of Northern America. The leaves are said to be used in Labrador as a substitute for tea, and bees are very fond of the blossoms, which are extremely ornamental. It is called *L. greenlandicum*.

Ledum palustre, (the marsh *Ledum*,) is an evergreen shrub, growing two feet high, with linear leaves, which are rusty beneath, and have their margins rolled back; the flowers are white, similar to the preceding, but smaller; and the plant is smaller in all its parts. It flowers in April and May. Native of swampy places, both in the north of Europe and in North America. There is a variety called *decumbens*, which has a decumbent habit.

Closely allied to these, and indeed so nearly related as to be formerly united with them, are two diminutive evergreen shrubs, of considerable beauty, which it will be desirable to notice in this place; these are the following:—

Ammyrsine, or *Leiophyllum thymifolium*, (the thyme-leaved *Ammyrsine*,) is an erect-growing dense evergreen tuft, of from six inches to a foot high, with small, nearly oval, smooth leaves, and terminal heads of minute white flowers, produced in May and June. It is a mountain plant, growing in New Jersey, and in Carolina, particularly on the higher summits of the Catawba range. It has also the several names of *Ledum buxifolium*, *L. thymifolium*, *L. serpyllifolium*, and *Ammyrsine buxifolia*;

and is by some regarded as *Leiophyllum*, as already noticed.

Ammyrsine prostrata, (the prostrate *Ammyrsine*,) is a small plant resembling the preceding, but the leaves are oval and the branches more spreading. It bears white flowers in June.

From the small size, neat habit, and abundant flowering of the *Ledums*, they are particularly adapted for forcing into bloom in the winter months, a course of treatment to which they readily submit. For this purpose, plants are taken up and potted in the early part of autumn, and are set by, usually, beneath the shelter of a north wall, until the bad weather comes on; they ought then to be placed under temporary shelter, such as a cold frame, before they are taken to the forcing-house. Plants are taken in, in succession, to keep up a supply of bloom, as may be required. Those are usually selected for potting which are neat and well-formed plants, and furnished pretty well with bloom-buds. After they have done blooming, they should be gradually hardened from the high temperature in which they have been grown, and finally planted out in the open beds during the spring; the same plants do not usually flower well the second season when kept in pots; a better display of bloom is secured by potting fresh plants every year. It is part of the business of the nurserymen who grow these American plants, to provide a supply of small, compact, well-formed plants, abundantly furnished with flower-buds, for this purpose.

THE ADENOCARPUS.

THE species of *Adenocarpus* constitute a small group of plants nearly related to, and possessing the general characteristics of, the hardy species of *Cytisus*, with which they also agree in their culture. The name *Adenocarpus* seems to have been applied by De Candolle, in allusion to certain glandular hairs which beset the seed-pods, and is compounded from the words *aden*, a gland, and *karpus*, fruit.

Adenocarpus boissieri, (Boissier's *Adenocarpus*,) is an arborescent shrub, growing from fifteen to twenty feet high, with trifoliolate leaves, the leaflets of which are linear. The flowers are reddish yellow, and fragrant, often produced in spikes of a foot in length. It is a beautiful species when in bloom, but of a gloomy ashy hue not in flower; it blooms in June and July. Found in Spain in warm valleys 4,500 to 5,000 feet above the sea.

Adenocarpus hispanicus, (the Spanish *Adenocarpus*,) is an upright shrub, from three to four feet high, with trifoliolate leaves, and terminal racemes of yellow flowers, which are produced in June and July. It is a native of shady and moist places in Spain and Portugal.

Adenocarpus intermedius, (the intermediate *Adenocarpus*;) is a very ornamental species, growing four feet high. It has trifoliolate leaves, and long terminal spikes of yellow flowers, which are produced profusely from May to July. It is a native of dry, gravelly, sunny places in Portugal, in Spain, in Sicily, and in Naples.

Adenocarpus parvifolius, (the small-leaved *Adenocarpus*;) is a shrub of the same habit as the preceding, and growing to about the same size. It has trifoliolate leaves, and loose spikes of yellow flowers, produced in June and July. It is a native of the sunny heaths of the west of France.

Adenocarpus telonensis, (the Toulon *Adenocarpus*;) is a shrub of four or five feet high, with trifoliolate leaves, and small bunches of yellow flowers. It is a native of heaths and sterile places in France. The flowers are produced in June and July.

There are two half-hardy shrubs, *A. foliolosus*, and *A. frankenioides*, both of which have yellow flowers, and both would probably succeed in mild winters with a very slight protection.

The species of *Adenocarpus* are very ornamental plants; they grow freely, and produce their blossoms in profusion if planted out in garden soil of ordinary quality. Neither do they require any peculiarities of treatment; the occasional shortening in of a branch, which may have extended unduly beyond the others, being the chief attention they require after they are once planted out. They form pretty plants, either as single detached specimens, or when occupying a front position in the shrubbery.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

MATURING GRAPES OUT OF DOORS.—A few ripe grapes may be had, with very little trouble, in a perfectly matured state, by every one who has a vine, a common garden-frame, and a very small quantity of fermenting materials. This is done by taking down a branch of convenient size, and laying it within the frame, which is placed on a slight hot-bed. As a case in point, we may mention an instance which occurred within our knowledge, where a person who had just taken possession of a small establishment, found an old and almost worthless *Sweet-water* vine at one side of the dwelling. The vine had neither figure nor well-arranged bearing wood; but it appeared that a branch might be brought down and laid within a frame. A common workman prepared one, which was painted, glazed, and completed at home. Two or three loads of very indifferent manure, which were on the premises, were laid in a square mass in front

of the vine, but a yard or so from the wall; this might be a yard high, but would have been better four feet. The frame was placed on the dung, and slates were laid on the manure within; a lath trellis was constructed a foot above the manure. A branch of the vine was then brought down, laid in the frame through a notch made at the back, and the small shoots being tied conveniently to the trellis, the lights were closed. This was done about mid-April. For a time the mass heated pretty well, and the buds enlarged: they showed abundance of fruit, which swelled freely, and produced many scores of fine, luscious clusters, rich in colour and flavour. No more dung was added; but had there been plenty at hand to line and renew the bed, the crop would have ripened in July. The parent vine, though conveying all the sap from the ground to the inclosed branch, did not ripen a single good berry.

ORCHARDS ON RIVER-BANKS.—Few situations combine so many advantages for the plantation of orchards or fruit-gardens, as the low grounds that form the banks of rivers. As an instance how valuable such a situation may be rendered under fruit-trees, there is a small piece of ground of this description, not exceeding three quarters of an acre, (in Kilkenny,) which is leased at a rent of fifty guineas per annum, solely on account of its fruit. It is planted with Pear and Apple trees, some of them nearly two hundred years old; one of which, a Pear-tree, often produces twenty thousand saleable fruit in the season.—*Horticultural Transactions*.

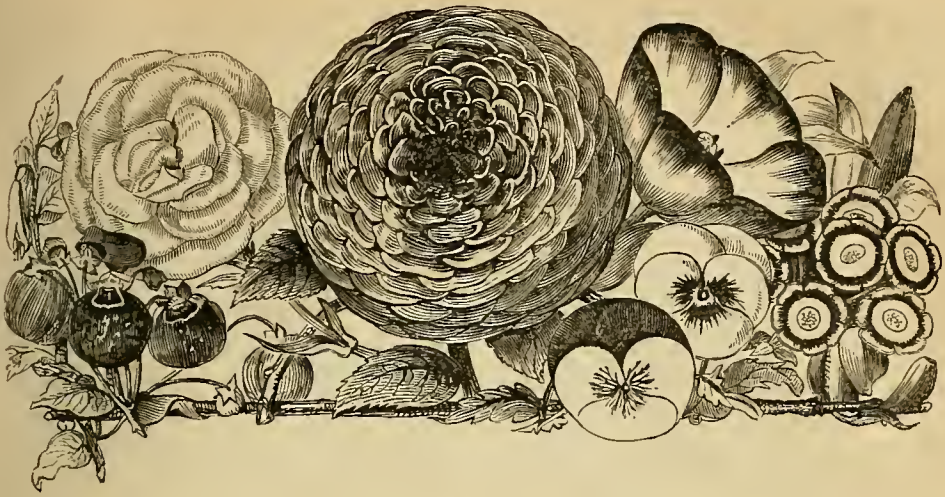
EARLY TULIPS.—Until of late years nothing but the two or three ordinary Tulips, which, by the way, happen to be nearly the worst we cultivate, were at all known; but we have now from sixty to eighty varieties annually imported from Holland; and we believe there is, in the King's-road, Chelsea, a garden in which all the principal ones can be seen. It is singular, however, that they preserve, amidst all the varieties, a distinctness that preserves them from all suspicion of belonging to the late, or show varieties. They are gay, but there is no distinctness in the markings; they are varied, but all the varieties are cloudy; and if among a great lot of seedlings, from late or show flowers, there happen to be any break away from their proper season, and bloom early, they partake of all the roughness and indistinctness that characterize the early bloomers. In looking into the details of the properties of these early flowers, we find that they are, for the most part, of a more flimsy texture; not that they are, in all cases, thinner than the later bloomers, but more soft. There is, however, in these early varieties, a charm which the others have not; they come when

flowers are scarce, and, as it were, light up the beds and borders in the spring, when they greatly assist the more quiet, but splendid colours of the Hyacinth. It is certain, that for general complexion, and distant view, there is more variety in the early than in the late Tulips; that is to say, the conspicuous colours that strike the eye are more diversified, although, if we examine closely, we should find that in detail the varieties in the late Tulips are more clearly defined. But early Tulips should be seen in full bloom, and all the varieties at once, and there can be nothing more desirable to give life and spirit to the small clumps that are hereafter to be filled with Verbenas, Heliotropes, and other summer flowers. There is not half the attention paid to these bulbs that they deserve.

MAKING OR REGULATING LAWNS.—It is as essential to trench the ground for lawns as for any other crops; and they who attempt to beat, or roll, or level a pasture, to imitate a made lawn, will incur a very great loss of labour, besides only making a despicable job of it. It is true, that, by waiting for a long wet season, when the ground has got fairly saturated, we may do a good deal towards beating a plot level, and, by frequent mowings and heavy rollings, we may improve the face of even a rough common; but when this is done as well as it can be done, only half the task is accomplished. To convert a mere pasture, such as that in parks, into a proper lawn, it is necessary, first, to beat and level, as well as possible, all the wet part in the autumn, and to keep mowing short. If the pasture, after this, is pretty much of a colour, and free from patches, let the whole be spread with road-drift, or sandy loam, enough to fill up all the hollows, and level it completely, so that in parts no grass will be seen, while in other parts the grass is scarcely disturbed. The spring growth will soon be through the road-sand, and forms a very level and much improved sward. But it frequently happens that the pasture is not all of a colour; that, in consequence of the soil beneath, some of the grass will be coarse, and some fine; some full of weeds, and some clean. In this case, as soon as the best has been made of the sward by beating, and rolling, and mowing, all the autumn, the entire surface ought to be cut into turves, three feet long, one foot wide, and an inch and a half thick. All of these that are clean, well grassed, and even, may be rolled up for use; and all that are broken, or uneven, or rotten, or have bad herbage, must be wheeled away to rot for compost. The ground being cleaned, must be trenched, and levelled, and rolled, and the turfs be laid down as close together all over as it is possible to set them, and then be beaten and rolled. Thus may a

pasture be converted to a lawn of the finest description in one season. As, however, all the bad and spoiled turfs must be made good from some other part of the premises, or be purchased, or procured elsewhere, we need hardly say, that the more care that is used in cutting the turfs the better; and if no other turf can be got without great inconvenience and expense, let the entire of the old be used again; for, although it may have been coarse and bad in its undisturbed situation, it would greatly improve when, by the cutting of the turves, the tap roots of coarse weeds have been severed, and the constant mowing and rolling keeps discouraging things of rampant growth. Lawns should be mowed every week, or, at most, every fortnight in growing weather, and the grass swept off. They should also be heavily rolled after rain. If there are any places where coarse weeds grow, they must be extirpated by means of a small spade, which is almost like a chisel, at the end of a hoe-handle; by pushing this in sloping, the root is cut, and the weed easily displaced, and most of them are got rid of by the bleeding of the root at all times after cutting. The Dandelion, as it is vulgarly called, has a tap root like the horse-radish; and even small pieces will come up again if left in the ground; but when the top has been taken off two or three times, as soon as the growth is made, two or three bleedings are the consequence; and this kills the most stubborn enemy if persevered in a few times.

TRANSMISSION OF BULBS.—Considering the number of bulbs which are annually brought to this country from foreign parts, it is a matter of some importance to know the best means of preparing them for transmission. Some bulbs, received from India, had been experimentally prepared, and were sent to the garden of the Horticultural Society for examination. We learn from the Society's *Journal*, that one half of the bulbs were simply wrapped in cotton, and packed in brown paper, while the other portion (the same kinds of bulbs) was encrusted in a kind of white wax, and covered with cotton like the others. When received in June 1844, those which were simply packed in cotton and brown paper had emitted roots, and the tops in most cases had grown considerably; while those coated with wax remained quite firm, and as fresh as when first packed, although they had been confined in the wax three months. The bulbs transmitted in cotton began to grow first, but soon showed symptoms of debility; while those sent in wax did not push till a month after they were potted, but then they grew strong and healthy. In one or two cases the bulbs perished in the cotton, while the same kind packed or coated in wax survived the journey.—*M.*



FLORISTS' FLOWERS.

THERE would seem to be abundance of instruction in the books already published on the subject of gardening, and, in a general way, the routine of business pointed out, in many works of moderate price, cannot be very much improved, so far as ordinary productions are concerned; but, if we except the papers which appear at intervals in some of the periodicals, there is nothing very complete on the culture of those subjects which have been wrought up to a pitch of excellence far removed from their natural state, and which require a degree of attention and a system of management totally different from the general routine of a garden. This especially applies to Florists' Flowers, which few writers even pretend to understand, and those who have ventured to write upon them have theorized, if we may use the term, a great deal too much to be relied upon. We feel, therefore, the necessity of supplying for the admirers of these subjects, that which has never been attempted before in a tangible form—a complete system for the culture of Florists' Flowers, for the whole year, upon a more enlarged plan than has yet been attempted, or than we shall entertain with regard to the more generally understood subjects. The kitchen garden, the stove, conservatory, the orchideous house, the orchard and fruit-garden, and even the nursery, are well understood by many gardeners who are altogether unacquainted with Florists' Flowers; not because they require more judgment, but that they have not, until of late years, formed even a subordinate feature in large establishments. They owe their origin, that is to say, their original departure from their natural state, to persons in humble life; and the more wealthy owners of first-rate gardens have felt it beneath their notice to countenance such

monsters—as the botanists call these splendid productions.

Florists' Flowers now form a distinct, though, in too many instances, still a subordinate feature in most gardens; and the raising of new varieties is no longer confined to the humble classes, though they still maintain great superiority in the cultivation of most of the favourite kinds, as even yet, first-rate gardeners are deficient in experience as to that branch of their profession. Now, however, that its advance, like the tide of a vast river, cannot be stemmed, it behoves us to supply that which must be acceptable to all classes,—complete directions to enable the amateur, as well as the professional cultivator, to produce these beautiful subjects in perfection; and that will account for our going into the subject at much greater length than can be given to any other of the numerous plants which occupy the British gardens.

Florists' Flowers may be variously defined; but, unquestionably, they comprise all those subjects which are selected by florists to seed from, improve, and perpetuate. The following points, therefore, must be considered as essential to constitute the claim of any flower or plant to that distinction:—*first*, it must be such as can be raised from seed to produce new varieties; and, *secondly*, it must be one that can be propagated so as to perpetuate any new variety that is produced. Thus, perennials of all kinds may become Florists' Flowers, because they can all be raised from seed; they all produce new varieties, and all the varieties so raised can be perpetuated to almost any extent. Annuals, on the contrary, can never be classed as Florists' Flowers, for the very reason, that, however much they may be improved by cultivation, or whatever

novelty may be produced one year, there is no dependence upon ever raising another like it, nor can the individual plant, by any means, be saved or perpetuated.

Beauty and qualifications for improvement are the principal recommendations of any plants to the notice of modern florists; hence we now have the Rose, the Pansy, the Dahlia, the Picotee, the Geranium, the Verbena, the Fuchsia, the Cineraria, the Calceolaria, and many others added to the number, or rather (as the late Mr. Loudon more properly expressed it), "elevated to the rank of Florists' Flowers;" whereas formerly the only subjects so distinguished were the Auricula, the Pink, the Carnation, the Tulip, the Ranunculus, the Hyacinth, and the Polyanthus. With these preliminary remarks, we introduce the first of a regular series of papers on Florists' Flowers, by Mr. G. Glenny, F.H.S. author of the *Properties of Flowers*,—than whom, we believe, there is no man more capable, nor are we aware of any one whose opinions and writings on these particular subjects are so deservedly respected, and so universally and implicitly relied upon.



GLENNY ON THE AURICULA.

THIS most delicate and attractive of spring flowers has long been highly favoured among florists, and perhaps enthusiasm has not been carried to a greater pitch, among the humble classes, with any other, unless it be the Tulip, which perhaps may vie with it as to the number of its extravagant admirers; but even this is doubtful. The Auricula has hitherto proved one of the most treacherous of all the florists' pets; and this always arising from a want of attention to a few rules now better understood; but it will be no easy task to make those who have been so fatally disappointed, recommence the cultivation of a flower with which they have been unsuccessful. It has always been considered that the Auricula required exciting soils, and no plant in the world has been so tampered with. From early

ages, particular cultivators have had their secrets, or pretended secrets, and probably in writing or speaking of them, have communicated imperfectly the means by which they have succeeded. It need hardly be questioned, then, that as most of the composts recommended by early writers have been exceedingly powerful, the slightest deviation in quantity, or strength, (in neither of which have they been very explicit) would naturally lead to destruction. Let us instance a few of the ingredients mentioned by these instructors. Emmerton recommends goose or pigeon's dung, night soil, sugar-bakers' scum—all exceedingly powerful manures, and if not carefully used, even to the most robust plants, in the highest degree mischievous; how much more dangerous then must these things have been when applied to the Auricula, which is one of the last that should be tampered with. But it is only fair to give some of the various composts which Emmerton recommended, and all of which he said he found successful. One was three barrowfuls of goose-dung, steeped in blood from the butcher's; three barrowfuls of sugar-baker's scum; two barrowfuls of fine yellow loam. Now the goose-dung steeped in blood can be defined by nobody. If it were new, it would absorb but little of the blood; if it were perfectly dry, it would absorb a good deal. In the one case, the blood would hardly be ten per cent, in the other it would be pretty well half; therefore it is impossible to say what extent of good or evil would lurk in this portion of the proposed compost. Again, he says, two barrowfuls of goose-dung steeped in blood, two barrowfuls of scum, two barrowfuls of night soil, and two barrowfuls of loam. The objections to the goose-dung and blood remain as in the last case; it is impossible to define the real quantity of blood absorbed. Each of these composts are to be mixed in a hole, and be turned over repeatedly for two years, that is to say, once a month, in an exposed situation, that every part may be frozen in winter, and heated by the sun and penetrated by the air in summer. Again, we have another compost recommended by him. It is, four barrowfuls of loam, steeped in night-soil and urine; two barrowfuls of goose-dung, mixed with blood; two barrowfuls of sugar-baker's scum, and two pecks of sea-sand. Again, for there is great variety in his composts, two barrowfuls of night-soil; one of cow-dung; one of yellow-loam, and one peck of sea-sand. Again, two barrowfuls of night soil; two of goose-dung; two of cow-dung; two of fine yellow loam, and two of sea-sand. Now looking at the different constitution of these varied composts, and the exceedingly powerful nature of their ingredients, it seems altogether incredible that they

should be all successful, which however the writer avers. He however admits, that unless these composts are turned over frequently, they will poison instead of nourish the plants, a fact which we can easily believe; in short, it appears to us, that a good deal of the quackery here recommended, has the mischief taken out of it by the exposure and constant turning for two years, in the same way that sea sand, which is fatal to many plants if used with all the salt in it, becomes perfectly innoxious if continually turned over and submitted to the rains, frosts, sun, and air, until the salt is washed out. Emmerton, however, contends that the blood is a most valuable addition to the compost, as "it will be the means of throwing brilliant colours into the pips or petals, and of giving life and vigour to the plants, as much as fine old Port or rich Madeira wine does to the human constitution." That large quantities of the wine will give colour to a man's nose, we admit is a possible case, but that blood will give colour to an Auricula pip has not been so well demonstrated. We have frequently seen the mischief of relying on book learning, and it has been too often the means of misleading the aspirant to scientific experiments. The difficulty of reconciling ourselves to the fact, that writers would wilfully communicate either nonsense or mischief, has been great; but seeing that we can lay our hands upon books, which seriously tell us how to make gold; how to transmute lead into silver, and various other impossible feats, we can no longer wonder at the sad stuff which we find in old books on Floriculture. We know it is possible to take the entire virtue of a soil clean away by constantly submitting it to the operation of exposure to air, frost, sun, and rain. In fact, all volatile salts may be evaporated or washed away, or got rid of by both operations; and even night-soil, or guano, the strongest and most mischievous of manures, may be rendered perfectly harmless by constant exposure of all their particles to the weather. It seems, however, a much more rational mode of using these things, to lessen the quantities while fresh, or comparatively fresh, instead of reducing the strength by the operation of time. Time is only necessary when we require a thing to be rotted, and which is not in a usable state until it be rotted; for instance, leaves would be of no earthly use in compost for present use, but rotted into mould they become of the greatest consequence. Kenny, another writer on the Auricula, says, he used loam, sheep's-dung, and hay litter. Maddox recommends willow mould as an ingredient, that is to say, decayed willow wood; cow-dung is also one of his favourite ingredients; ashes of burned vegetables, peaty or moory earth, earth of rotten leaves, and

sea or river sand; and Maddox, being a more recent writer, has been received as a better authority. But confusion worse confounded seems to be the leading characteristic of too many writings on this favourite flower, and those who have read much should be cautioned to banish from their minds all that they have read upon the subject, that they should begin free from prejudice, and untainted with bad instructions; for strange as it may seem, all who have attempted to write on this and many other flowers, have been indebted to their predecessors, and whatever they have added that was new, has been as speculative and theoretical (though a little more rational perhaps) as any that has been written before. For instance, Curtis, in a later edition of Maddox's work, recommends in a note the use of compost without loam, his ingredients being two-thirds rotten dung, and the other third, equal parts of peat, or bog, and coarse sand. Henderson recommends two parts rotten dung, one part vegetable mould, one part river sand—all of which must have been recommended without any knowledge of its effect, and without much consideration. Justice is the most rational of all the writers on Auriculas; he says he has produced the finest bloom that ever was seen in the whole kingdom; nay, in all Europe, in the following compost:—Half free fresh loam, from under an old pasture, and the other half compounded as follows: three parts three years old cow-dung, and one part sea or river sand, and these not to be mixed together until a short time before they are wanted. We say this is the most rational of all, because the quality of the loam, which is the most important of all the ingredients, is the only thing in doubt, and we have a right to suppose that when he describes that as free fresh loam from under an old pasture, he means the best. He however, casually mentions fuller's earth, as if it had been in common use with others, and even he was inclined to tolerate it. He says, "If you use fuller's earth to them, it must be done in the proportion only of an eighth part, and at no time but in the spring dressing; for," he adds, "if used in autumn it is prejudicial, and even when it is used in spring it must be well dissolved in warm water before being used, and then use no sand." Here we have a sort of admission, that fuller's earth may be used as a substitute for the sand; yet, one can hardly think of a binding substance being in the least adapted to act as a make-shift for sand, which is of a decidedly opposite character, and the use of which is, in all cases, for the purpose of opening the pores of the compost, in which it is to be introduced, so that it would seem almost an impossibility to find any of the old writers consistent, either with com-

mon sense or themselves. We have, however, grown Auriculas in the compost recommended by Justice ; that is to say, four parts good loam, three parts rotten cow-dung, and one part sand, and we have been successful almost beyond our hopes ; but we have seen, not three miles from us, a good gardener using, or fancying he was using, the same composts, and failing ; an examination of the loam showed us the difference lay there, and that nothing he could have done would have succeeded with the same loam ; it was hungry stuff, and although from under an old pasture, was certainly not what Justice meant by free fresh loam. We have been somewhat prosy upon this part of our subject, because to the soil, or rather the compost employed, may be attributed a large portion of the failures that have discouraged the cultivation of Auriculas ; and the use of improper compost may be attributed to that innate love of quackery which pervades all classes, and the extent to which it was indulged in by the writers of an early period ; nor is there a much more difficult task at this period, than that of persuading the young aspirant to floral honours, that the older writers could put in print anything that was not sound and proper advice ; a feeling that is increased by the unfounded notions still entertained by many, that our forefathers cultivated the Auricula better than the growers of the present day. It may, however, be assumed, that the only safe mode of bringing up a young florist, is to teach the most simple modes of culture, and the use of the most harmless composts, and let actual experience do all the rest. We therefore recommend the adoption of a compost that cannot mislead, a compost that will keep plants in healthy growth, give a good average bloom in every situation, and never lead to failure. The only ingredients we have used for the general compost is simple, well understood, easily procured, and will answer in any situation. We may premise, that, considering it mattered but little how vegetable mould (which is a necessary ingredient in the composts for Auriculas) was procured, we have cared but little whether we had rotted leaves, or rotted wood, or any other rotted vegetable, and therefore have always preferred for our loam the turves themselves, cut about three inches thick and rotted altogether, which they will do in about a year ; and as the top two or three inches of any pasture is invariably the best, the mass, when rotted together, forms of itself a compost which would be about two-thirds loam and one-third vegetable mould, which would of itself grow almost any potted-plant in the country, at all events it would be a fine staple soil with which to mix every other necessary ingredient. After these turves have lain a

year together, they may be chopped down and turned over a few times, to get rid of any vermin it may contain ; and if it be freed from these we may be sure there is nothing pernicious in its composition, for the mould formed of rotted vegetables cannot be ill adapted for any growth. All this requires when used, is to be rubbed through a very coarse sieve or skreen, so as to clear it of half-decayed turves, and the coarser portions of the roots. It will be found sometimes that we can only get the top spit of the soil, and that we are obliged to make that do. In this case, if the loam be good rich friable stuff, all we have to recollect when we use it is, that there is a much less portion of vegetable mould in it, and that this deficiency has to be supplied by other means, or at least taken into the account, when mixing up a compost for use. If the top spit of loam be laid together to rot, the vegetable mould in it will not be more than one-tenth, in fact, scarcely enough to calculate on at all, considering that an excess of vegetable matter is the least consequence of anything. If the loam be composed of turves, cut in the usual way, it will require no vegetable or other manure. If three inches thick and rotted together, it will require no other vegetable, and very little of any other manure ; and if the top spit, which is seven or eight inches of soil to the one thickness of turf, we should count the rotted turf as of very little importance. And in this case we should not materially alter the compost from that recommended by Justice, of half of this loam, and the other half composed of three parts well rotted cow-dung, and one part of clean sand, for we should merely put three parts loam and one of vegetable mould instead of four parts loam ; and the only way to make sure of clean sand, is to submit whatever we use to sufficient washing, to remove all extraneous matter ; those who are very particular use silver sand, which is naturally more free from any salts or foreign matter than any other, unless it be clear river sand. With regard to cow-dung, the best is that dropped on the pastures, and taken up after the sun has baked it ; this should be laid together in a heap to rot, and is better two years old than one, in which time it forms a very rich mould, easily mixed with the other compost. In the absence of cow-dung, we have used horse droppings, taken from pastures in which the food of the animal is grass, and there are those who insist that one is as good as the other. It may be so, and we should not hesitate to use it, though from our extraordinary success with cow-dung, we should prefer it, if both were equally handy. If we have the rotted turves with no more than the thickness of two inches of loam to them, there will be such a large proportion of vegetabl

mould in the compost, that we should put one-eighth, or at most one part of cow-dung and one part of sand to six parts of the loam, and in this soil we should be content to grow the finest collection. The pasture from which the turf should be cut, should be what is called rich meadow, not laying too low, so as to be under water at any period, because that might entirely alter the character of the loam, or earth itself, by periodical deposits of foreign matter—whatever might wash from the neighbouring soil, and thus some inches of the soil might be any thing but loam. From these remarks, our readers may gather that we entirely repudiate all the nostrums so strongly recommended by Emmerton and others, and trust altogether to the simple material of friable clean loam, vegetable mould, and the mould from cow or horse droppings, gathered from pastures and rotted; and without disputing that the mould from decayed willow, or other light wood, free from resin or gummy sap, may be as good vegetable mould as any from rotted leaves, we should, nevertheless, use that which we know to be good, in preference to any so liable to be impure from the immense time it takes to rot, and the almost certainty of its acquiring foreign substances in its progress to decay. We now come to the treatment of the plants, which must be got from some person who grows them in a healthy state; select your sorts according to your wants, commencing, however, with those considered best for exhibition, and possessing the best properties. We recommend the following to begin with, although from the description we shall give it will be seen they are at present far from all that can be desired.

GREEN-EDGED.—Dickson's Matilda, Page's Champion, Lee's Col. Taylor, Booth's Freedom, Pollett's Highland Boy, Stretche's Emperor Alexander, Smith's Waterloo, Hudson's Apollo, Dickson's Earl of Errol, Dickson's Duke of Wellington, Dickson's Prince Albert, and Lightbody's Lord Lynedoch.

GREY-EDGED.—Fletcher's Ne Plus Ultra, Waterhouse's Conqueror of Europe, Dickson's Unique, Oliver's Lovely Anne, Kenyon's Ringleader, Sykes's Complete, Hedge's Britannia, Grimes's Privateer, Maclean's Unique, Fletcher's Mary Anne, Dickson's Duke of Sussex.

WHITE-EDGED.—Taylor's Glory, Taylor's Incomparable, Popplewell's Conqueror, Thorpe's Maggie.

SELFS.—Redman's Metropolitan, Netherwood's Othello, Dickson's Apollo, and Bury's Lord Primate.

You must now be provided with a frame and light, like a common cucumber frame, and make a stone or brick, cemented, or asphalted bottom or floor, on which to place it.

Let this be so constructed that all superfluous water will run off out of the frame, and leave it dry at bottom after every watering, or after rain. Much depends on the time of year at which the plants are purchased or procured; but they must be at once treated according to the rules laid down in the annexed calendar for the month in which they are purchased. But the frame has to hold them eight or nine months out of the twelve, if not the whole time except while in bloom, during which period they are generally placed on a sort of stage for showing them off to the best advantage, or kept under shaded hand-glasses for prolonging the flowers through all the exhibitions. We recommend them to be purchased while in bloom, or immediately afterwards, if they cannot be had in January or February, because you can see the strength of the plant at those periods better than at any other; for, before blooming, they can be chosen by their strength, as indicated by their firmness in the pot, and their cabbage-like appearance in the heart: and while the bloom is on them, or the remains of it, there can be no mistake, for the plant will have begun its fresh growth, if it be strong, and there will be no difficulty in the selection. But we must not from this infer that a respectable grower would give plants that will not do justice; and it is the safest mode of purchasing, after all, to buy at a respectable florist's garden, if you pay twenty per cent. more for the security which it affords to an inexperienced buyer. It would be invidious here to mention names, because there are more respectable dealers than we could conveniently mention, and to leave any out would be doing an injustice. As a general hint we would say, avoid extraordinary cheapness as indicated by advertisements or catalogues, because there is more than fifty per cent. difference between strong and weak plants; and show-flowers must not be considered like new exotic plants, which are always let out as soon as they have fairly rooted; indeed it is an old saying, that a root and two leaves is a plant. All florists' flowers are sold in strong blooming specimens, as well as mere offsets that will throw a flower; and it is the same with tulips, polyanthus, and many other subjects. The merely giving a flower, is enough to justify the sale of even weak things, by catalogue, at a price; but a strong blooming plant is worth two such miserable apologies. It is hardly the same with pinks, carnations, picotees, and subjects that bloom at one season as well as they bloom at all, because there can be no fairly rooted plant that is not capable of being flowered in perfection, and, therefore, a well rooted plant of either is a fair saleable subject. If the plants are purchased just past their bloom,

choose those which are beginning a fresh growth by the side of the stem, and are firm in the pot ; if before bloom, select those with the largest heart—but there are some houses that you may write your order to, and make sure of receiving the best plants they have at the time. It has been the custom among those growers who use very exciting compost, to repot their plants every year, shaking out the mould from the fibres and shortening them, and also cutting off the bottom part of the tap or centre of the root, which, in nine cases out of ten, would be found decayed or rotting. And it is certain, that if any part of the root be specked or decayed, and it be left so, it will progress until it carries off the plant. We do not hold with doing this violence to any plant above once in two years, for the check is much greater than is desirable, and must affect its general strength, although if done early it soon makes new roots. We do not dispute that it has been done with great success by many excellent growers, but there have been many points of practice carried on from father to son until they have been fairly woven into the ordinary management, and no one has questioned why it was so. The annual potting of the Auricula, and the trying operation of shaking out all the soil from the roots, may have been highly necessary under the old method of growing them in exciting compost, because there is no doubt the decay of the lower part of the root was almost a natural result, and unless that were removed destruction was inevitable ; now, however, that they are found to do well in wholesome loam, dung, and vegetable mould, and to be not subject to those attacks, a plant may be raised from an offset, in a small sixty-sized pot, removed when full of roots for a larger, bloomed by shifting to a forty-eight size, and changed to a thirty-two, or even a twenty-four, without once shaking out, and bloomed in the last sized pot stronger and better than in the smaller ones. People are not so fond of the violent treatment to which the older growers subjected these beautiful subjects. In potting the Auricula, one of the first considerations is the drainage ; it is necessary to turn the pot bottom upwards, and to knock the hole from the outside so as to chip off a piece inwardly, this makes a clear descent for the water, which in most pots would lodge, for the edge of the hole generally stands up rather higher than the bottom itself. The chipping will be found very easily accomplished, even by hitting the sharp edge of the bottom of one pot on the hole of the other : they chip very readily, and it is a necessary operation, for if the water can lodge at the bottom of the pot, there is danger of the plant. This being done, the next consideration is the material through

which the water is to percolate as it leaves the mould. In all small pots used for offsets or seedlings we use moss ; it takes less room than a sufficient number of broken potsherds or crocks would, and room is an object in the small pots ; in the larger ones there should be placed one piece of broken pot, large enough to cover the hole, and a number of smaller ones to fill the bottom of the pot up nearly one-third of the height, this secures a drainage which nothing else will, with equal firmness. Moss, in any large quantity, would settle down in time, and disturb the plant from its proper height ; and cinders or clinkers cannot be so free from impurities, as broken pieces of the same kind of pots as they are growing in ; in general one-third of the entire height of the contents of the pot should be these crocks, and the compost should, when the plants are fresh potted, be filled to within a very short distance of the edge of the pot, for when watered it settles down. Supposing the plants to be bought in at the close of the bloom, it would be, upon the whole, the best treatment to shake out all the soil from the roots, and to examine them, because you cannot possibly calculate on the state of the roots by the appearance of the plants at the time. The root, that is, the centre lump of it, should not be more than an inch or an inch and a half long, but if it is much longer, cut off all above an inch and a half from the collar or place where the lower leaves join ; the removal of this extra length also removes all the fibres on it. You must likewise be careful to remove every morsel of canker or rot, even if you are obliged to remove every atom of root, and let the plant make fresh ; but if any are attacked very bad, you had better return them to the party you purchased of. It is, at all events, quite requisite to cut away every speck if you keep them. In potting them, you partly fill the pot with the compost we have mentioned, by heaping it in the form of a cone in the centre, nearly up to the top, then introduce the plant with the large portion or centre of the root on the cone, and gently press it to its place, which should be, with the collar of the plant, where the bottom leaves come out, even with the top edge of the pot ; the fibrous roots should be spread all round, and the earth filled on them gently, pressed with the fingers so as to close the soil about the fibres, and when the earth is filled up to the top edge of the pot, it may be pressed down on the face of it, so as to lower the plant itself a trifle below the top edge, and two or three gentle knocks on the potting table will settle all the compost a little below the top, but very trifling indeed, because watering will settle it a little more. You will then know that all your

plants are sound and clean, and that they have clean wholesome stuff to grow in. They ought now to be placed in their frame, watered gently with a very fine rose and soft water, and shut up for two or three days shaded from the sun; they may then have air and even mild showers of rain, but they must not have the heat of the sun for some time, indeed they ought not at any time, though we do occasionally take less care about this with established plants than with any newly potted. If these plants were your own instead of being fresh purchased, we should not recommend potting so soon after flowering; but when uncertain, as in the case of purchasing new plants, the sooner you do it the better, because the examination and shaking out the soil from the roots generally checks them. The further management of these newly-potted plants is distinct from that of the others; it chiefly consists in their being less able to bear wind, sun, and heavy rains, than plants established in their pots, and, consequently, they must not be so much exposed. When the plants are potted at their proper season, all the offsets are to be taken off, and those which have roots should be placed in small pots; those which have not, should be put round the edge of a larger one, to strike roots; and if they are at all doubtful, the pot should be plunged inside a larger one, so that a bell-glass might be put on, to go outside the small one, and within the edge of the large one, so as to press down the edge into the soil and exclude the air, which promotes the striking of the roots: planting them round the edges, so as to touch the sides of a pot, also causes them to strike sooner: when these are well rooted they should be potted in sixty-sized pots, and be protected in the frames until well established.

With regard to the proper time of repotting the general stock of plants, you must be guided by circumstances. A month after blooming, examine them by turning out the balls of earth. Those which, on examination, appear to have filled their pots with roots, must be shifted into pots a size larger; on the other hand, those which have not filled their pots with root may be allowed to grow still; but the general shifting time should be July, or August at latest. Here, however, we have a great diversity of opinion among the old growers: Emmerton says, "From the 29th of May to the 12th of June I have transplanted with success;" but he admits that he has done it as late as the 13th of July also, successfully. Maddock recommends immediately after the bloom for repotting; and he considers, that if it be postponed till autumn, they have not time to recover their strength before spring. There is, however, an insuperable objection to repotting directly after bloom. If they are

set growing, they are almost sure to throw up their blooms in autumn instead of the proper season; and if they are not set growing they take still more harm from the check they receive at a critical period, namely, just as they start for growing after their bloom. July and August are the best months, according to our practice, save and except where it is manifest that the plant has filled the pots with roots, and therefore must be losing ground by a continuance of its confinement. The repotting of the plants that have been only one year, or rather one season, in their blooming-pots, should be done without disturbing a fibre. The ball should be turned out in the hand, by only tapping the edge on the table, and the loose crocks, if any, may be removed; then select pots a proper size, and putting a proper quantity of crocks in the bottom, and some compost on this, about enough to raise the ball to a proper height, place it in the centre, and carefully fill up the vacancy between the ball and the side of the pot with proper compost, without rubbing, or bruising, or displacing the fibres from the side of the ball. This must be adjusted so that the collar of the plant should be up even with the top edge of the pot, and the soil very little below it when shook down. In this case gentle watering will settle the earth about the roots, and it will require no more care than if it had not been shifted. The season, however, for this as well as the general removal of plants, should be July or August. Hogg recommended August, and he was a practical man, though originally an amateur. Justice directs the transplanting of small and large plants in August, while Henderson always did it in May, about the third week; but he was for the severe discipline, and the plants had a good deal to recover after the inflictions of his knife. We could here go to considerable length in the description of the various houses and contrivances for wintering the plants; but we recommend any one who likes to see good plants well grown, to see Mr. Dickson's, of Acre Lane; there will be found hundreds of plants as healthy as it is possible to grow them, and in the rudest health and strength, wintered in nothing but the common garden frame and light. This is sufficient to convince any grower that he need not trouble himself about the construction of houses for wintering the Auricula. Among all the contrivances, there are none to be found more generally or more successfully used than the ordinary cold frame; and until we find some really tangible objection to it, we shall trouble ourselves with no other. The plant merely requires to be kept from hard frosts, heavy rains, and bleak winds, and a frame does this as well as any thing. It has been said that frost does not injure the Auricula;

this is a mistake. It may be hardy enough to stand frost without showing any external mischief; but if it be frozen to the centre, the bloom which is in its incipient state will receive an injury that will manifest itself in crumpled or deformed flowers, bad colours and rough notched edges; but a common covering of water-proof cotton or cloth will do all that is necessary. The rising of the bloom should take place in April; near London, they would bloom toward the 20th, and continue half through May in flower. As the buds begin to develop themselves, the faulty and very small ones should be cut or pulled out with a pair of sharp tweezers, so as to reduce them to eight or nine pips; but they need not be pulled out all at once, because they must get a little forward before they show which will be the best. Near London there must be seven pips on a truss; in the country, especially in the North, they show only five; but there is no comparison between the beauty of a truss of five and seven, for the seven allows of a middle pip, and the six form a close circle of flowers round the centre one. Nevertheless, there are flowers which will give fifteen or twenty pips, and when they come strong the grower is unwilling to lose any good pip. In such case, however, it will soon be seen whether any one or two take a lead beyond the rest, or any two or three are likely to be behind all the others. In either case, those far in advance or far behind should be removed; again, when the truss is crowded, it is sometimes found impossible to give them room to bloom properly; and it must be always recollected that the flowers must have room to form a truss without lapping over each other, because the whole of each pip or flower should be seen. In reducing the number of pips, therefore, regard must be had to this, and no more must be left on the truss than can be spread out in that manner. As the flowers expand, soft moss should be tucked in between the foot-stalks, so as to keep the flowers out of each other's way and give them room to open flat, and the sun must be kept from them, as well as all chances of a frost; however, these will come more in place among the calenderial directions.

We now proceed to give the treatment which we have always observed from month to month; and as we must begin the year, we are to presume that the plants are all in their frames, in the compost we have recommended; that there are offsets round the edges of pots, struck and not struck root, as the case may be, others singly in the smallest pots, and plants of all sizes upwards, to those in the smallest show pots, which are size forty-eight, and those in the larger ones, size thirty-two; besides which, we are to suppose there are seed-

lings of one season and upwards, all requiring the attention peculiar to their several states. We commence then with—

MONTHLY OPERATIONS.

JANUARY.—As there is danger of frost this month, and it is not desirable to get them frozen, it is necessary to keep coverings ready for use, and to cover the last thing at night, however mild it may be; but the milder the weather, the later ought they to be covered up; the morning frosts frequently come without any previous indication. If the weather be mild in the mornings and through the day, although the ground may be frozen, the plants may have air all the warmer part of the day. It must be observed too, that the plants will require watering but seldom, indeed, while there is any moisture in the soil they ought not to have any; they might, until the end of the month, be almost allowed to flag before they have it, but there must be no tampering with water; whether they have it once in a month, or once in three months, they must have enough to wet all their compost alike. There is nothing more dangerous than partial watering, and we were going to say, nothing more frequently given, sprinklings that hardly go an inch into the soil, and leave all the under portion as dry as dust; the consequence is, not with these only, but all other plants, that the top fibres get a little nourishment, while the principal get none, and the plant is checked too often fatally. If they will do without, let them; but when you give it, let it be enough to go through; and all waterings should be with a fine rose, so that they may require several times going over before the soil is well wetted. As a general rule, they should have all the air that can be given, whenever the weather is sufficiently mild; but in north or east winds of any strength, they are better only tilted on the side, away from the blowing point. This treatment is still good for offsets, seedlings, and old blooming plants. The frame should occasionally be emptied and swept out, and the plants re-turned, for it clears away vermin and the eggs of vermin; and besides, keeps the plants and pots clean, and as they are re-turned, the holes should be examined, and the pots rubbed round with the hand to clear away any dirt.

FEBRUARY.—In this month, and early in next, the plants for blooming should be all top-dressed. The surface should be stirred with a blunt piece of wood, so as to loosen as much as you can without disturbing the fibres, and the loose stuff thrown out. The top-dressing should be rich. If you have good well-rotted poultry dung, you may add one-fourth of it, one-fourth of cow-dung also rotted, and two-fourths, or half, of clean sand. These, well mixed together, make a first-rate top-

dressing ; but in the absence of poultry-dung, you may use two-thirds cow-dung, and one-third sand. This must be put on the top, to fill the pot to the rim ; but previous to putting it on, the dead and decaying leaves must be carefully removed by pressing them, or rather tearing them downwards, bearing at the same time a little sideways. When they are all filled up as proposed, they are to be returned to their frames, and have the benefit of shading for a day or two, and a gentle, but nevertheless, proper watering. The foliage as well as the soil should be watered, so that a fine rose and a light hand should imitate a gentle shower of rain ; and if there happen to be a mild shower, they may have the benefit of it, for it is not to be presumed that any watering is so good as they would receive from two or three hours' gentle rain ; for this reason, we should not be in a hurry to water after top-dressing, until it began to get rather dry, for if it were to get very dry, the water would hardly soak in. The plants will begin to grow fast towards the end of the month, if the weather be at all genial, and will require additional care to keep from frost, by timely and efficient covering. The seedlings in pans will be greatly helped by stirring the earth between them. All seedlings coming forward enough to bloom even in their small pots, should be top-dressed, as well as the regular blooming plants, for they want the stimulus which the removal of the spent earth and the substitution of good rich compost never fails to give, and they will be greatly assisted by the operation ; nor will any of the pots of off-sets be the worse for similar treatment, as the earth will be generally found a good deal sunk or settled down in the pot, and sometimes the surface foul, or mossed over. Stirring a little, and throwing out the top, and substituting fresh rich compost, will give an extra strength to the growth, and be of use in forming good plants for a future time.

MARCH.—The plants are now growing fast, and before the end of the month many trusses will be showing. Of course, any that are not already top-dressed, must be set to rights, without delay, as directed last month. Care must be taken now, that the hearts of the plants do not fill with dust or water after the pips show, for dust would stain the flowers, and wet, for any continuance, would injure the mealy powder which forms so conspicuous a portion of the surface of the bloom. In watering, therefore, the greatest care must be taken to avoid wetting the foliage, or washing the dirt up into the plant, until the truss rises up, when there is not so much danger, for a gentle rain will not hurt the pips, nor the ordinary watering of a very fine rose ; but when it is considered that the powder which characterises

the flowers and leaves of this plant is easily displaced, it must be obvious, that while the truss is down in the heart, wet and dirt must be fatal to what might otherwise be a good bloom. If there be any plants on which you are depending for a strong flower, and the off-sets are not an object, remove, at once, any that may be growing out of the stem, by cutting them away with a sharp knife, before they have become large enough to rob the parent plants of any part of their nourishment, because, if an off-set takes to healthy growth, it seriously affects the bloom any time before it is matured. If, on the other hand, you are depending on increase, and can spare the bloom, pick off all the pips, and earth up the off-sets, which will cause them to grow more rapidly, and strike down roots. Seedlings will, in some instances, be blooming even this month. As soon as you can ascertain that they are not better than we have, get rid of them, either by throwing or giving them away, or selling them, for as the only object of raising seedlings is to get better than we have, or something as good, and different from what we have, all that do not answer that description are totally worthless to the growers of collections. Seed may be sown this month in large pots, of similar earth to that in which they are grown. We prefer large pots to seed-pans, because the greater body of earth keeps more uniformly moist than the shallow pans will allow it to keep. This should be levelled an inch below the top, and the remainder should be sifted through a fine sieve. The pot should be gently bumped on the table, to settle the earth down a little, and then levelled with a strike, so as to be even with the top edge of the pot ; on this, sprinkle the seed thinly, and sift only just enough fine stuff over it to cover it properly. This must be placed in the frame along with the plants, and before the earth is dry at the top, let it be watered with a fine rose, so fine as that the wet may fall like dew, for it is absolutely necessary that there be not a grain of earth or seed disturbed. It is the best way to use one of the patent syringes, with the finest rose that is made, and to throw the water up, that it may descend without any force whatever, and in so light a shower, that it can disturb nothing. It must be watered enough to wet the whole body of earth, for frequent waterings are not desirable ; this will sink the whole body below the edge of the pot, and a flat glass may be placed on it, when you are giving the plants air, but it must not receive the whole heat of the sun.

APRIL.—The trusses of the rising blooms must now be attended to. Those which are to be nursed for their blooms, must, as soon as they begin to open, be placed apart from

each other, by tucking bits of soft moss, or lint, (the former, however, is far the better) between the foot-stalks, so as to place the pips a sufficient distance from each other to open freely without touching; and any pips that are coming deformed, or too weak to open the size of the rest, or too much advanced to keep while the others overtake them, may be removed with sharp pointed scissors or tweezers, and great attention must be paid, that none of those which are to remain get damaged in the operation. When the colours become pretty clear in the budding pips, and they begin to open out well, those intended for exhibition should be removed to a warm sheltered spot, and be placed under hand-glasses, on a table or bench, if convenient; but if not, on a very clear spot of ground, out of the way of wind and dust. Water must be administered freely while the blooms are advancing, for they require a good deal of nourishment, to give them size, and colour, and character; and would be seriously checked, if allowed to want it. Care must also be taken to cover from frost. The hand-glasses ought to stand on four flower pots reversed, and placed at the corners, of a proper height to let the edge of the glass down an inch below the edges of the pots in which the plants are; but in windy weather, it will be necessary to cover mats on the windy side, and the sun must be kept off, by as light a cloth or calico as can be had, for light is of great service in bringing out the colours. Continue to reject seedlings that are useless, and to pick off the pips of small plants that you wish to grow well, as the blooming will retard them. Attend well to watering seedlings and small plants, as the smaller the pot the sooner they dry, and the plants suffer accordingly. Take off dead leaves, and occasionally clean out the frames. The examination of the plants blooming for show, should be frequent, because the blooms arranged one day, may, by their growth, displace some of the moss, and they will require very frequent adjustment, for by means of the moss, properly attended to, the flowers will be grown into their proper position, and want no dressing on the day of show, but merely removing the moss.

MAY.—The treatment should in all respects be similar to last month, for the greater part of April, and more than half of May, gives us blooming specimens in every stage, from just opening to the perfect flower; but as some of the early ones will have gone off bloom, you may place them in a frame by themselves, in a shady situation, and allow them to receive a moderate share of genial rain, but cover them against violent falls, and in stormy weather. Those who intend saving seed should remove half a dozen choice varieties, whose properties

they wish to amalgamate, and place them under a hand-glass, supported by pots a few inches from the ground. The plants to select should be one season potted, and they should be taken before the pips are forward enough to be fertilized. As soon as they show well enough to enable us to distinguish perfect from imperfect pips, those most perfect in each truss should be selected for seed, and the remainder be picked off. The number of pips to leave on, may be determined by the quality; if there are two or three equally good, two or three may be retained; if there be one better than the rest, that one alone should be kept. These plants must be refreshed with water, and may be uncovered, to receive the benefit of a mild shower, but the glass should be placed over them at night; and if there should be any indication of frost, a mat, also, that will reach to the ground, as frost might prevent them from seeding. Some would take the trouble to fertilize them artificially, but this is a matter of fancy. To do this the anthers must be removed, before they burst, from the one to be impregnated, and then, with a camel's hair brush, take the powder from some fine pip of the sort whose properties are required to be imparted to the seedlings, and take it to the plant to be seeded. If the pistil be in a condition to receive the pollen, it will take it from the camel's hair pencil or brush freely: by this means your best pips on all the selected plants may be impregnated with the pollen taken from the best pips in the whole collection; and thus something like a chance of a fine race of seedlings will be secured, as far as our means of providing for it enables us to do so. It is well to study what properties are required by any particular variety to improve it, and to apply the pollen of a flower possessing that quality. The depriving of the plants of some of their buds will increase the strength of those left, and augment the chances of producing good seed; and, confining the selected plants to those with some good property, and fertilizing with others of known other good properties, will afford reasonable hope of saving a little seed of first-rate quality, and producing plants of a desirable quality.

JUNE.—The plants, as they have done blooming, may be placed in a frame, in a shady situation, as before directed; and as no seed may be required from the general collection, the whole of the pips may be picked off, but the stem ought not to be broken; they must be watered occasionally, or be allowed to have rain, and be uncovered altogether, except in stormy weather, and especially when the wind is boisterous. They may suffer from too much wet; but if the bottom of the frame is impervious to water, and will allow it to run off, there will be little danger. Yellow leaves

must from time to time be picked off, and the drainage examined; for at this period the soil is apt to work down among the crocks, and even fill up the holes in the bottom, in which case the soil remains too wet for the health and proper growth of the plants. Water seedlings occasionally, and where there are fresh sown ones up, as soon as they are large enough to handle well, prick them out into fresh pots an inch apart, to grow into strength. Seedlings that have been growing in this state until they nearly touch, may be planted round the edges of pots, about three in a large sixty, or four or five in a size of forty-eight; any of those that have advanced much after being so planted, may be removed, one each, into sixty-sized pots; and those in sixty-sized pots may, if their roots fill the pot, be removed to size forty-eight, for seedlings ought to be encouraged in their growth, without reference to season, until they develop their qualities, when they are either permanently adopted or got rid of. Continue putting into the shady frames all plants as they go out of flower.

JULY.—The practice of last month, in every particular that it will apply, is to be continued without any exception. As the plants have, throughout the collection, done blooming, they must be all subject to the same treatment; but those plants which have not flowered need not be moved from their winter frames; and although they must have the advantages of covering from extreme wet, and shading from hot sun, they must be uncovered as much as possible, with due regard to these provisions; or it would be as well, if you have flooring enough made, for all the lights to be removed to the shade; it would save the trouble and attendance required for shading, while they remain in their original place. Seed that is ripening may be picked and put in the sun to dry, in such boxes or drawers as will prevent any from escaping; and those who like autumn sowing may sow half their stock.

AUGUST.—This month we propose to re-pot the general collection, and we advise one prevailing rule, to disturb as little as possible the balls of earth of all those that have been one year potted in the smaller flowering-pots; remove the offsets as carefully as possible, and be careful to preserve the roots of the old plants from injury, as much as you can. The surface of the balls may be rubbed off a little, so that the fibres are not bruised or broken, and the loose crocks at the bottom may be taken away; but the next sized pot must be supplied with crocks, and sufficient compost in them to raise the ball to the surface. Compost must then be filled in between the ball and the pot, and pressed between, without moving or displacing the root. If, on turning out any of these balls, the roots do not appear to have

grown much round the sides, they may be replaced in their own pot, and allowed to go over another season in the same; but if the plant be not healthy, you may conclude there is something wrong at the root, and therefore you should shake out all the soil, and examine it, as directed with regard to new plants. The plants that have been bloomed the second year, and have been one season in thirty-two sized pots, may be shaken out and deprived of some of their roots; and the best way to do this is, to shorten the main centre, or carrot-like portion, with the fibres attached to it; they must be then carefully re-potted, in the same sized pot, if strong, and if not strong, in a forty-eight sized pot; but mostly these plants from the large sized pots are strong, and although deprived of their lower roots, want room; besides which, the present potting of them will do for two seasons, if they are healthy. The present month must be looked upon as the potting month, and the whole collection, down to the smallest plants that have not already undergone it, should be changed. Look well to the watering of seedlings, pricking out, potting, or shifting all that require it; when these are potted, shifted, and properly attended to in all these particulars, let them be returned to their shady frames, watered, to settle the earth about their roots, and closed up altogether for two or three days, after which they may have air as usual, and be protected from heavy rain, but except against violent or too much rain, they may be wholly uncovered. The offsets taken off during all the potting operations must be placed round the edges of pots, to strike root, or if rooted, potted off into small pots about the size which the plants warrant; very small ones, even if rooted, may be planted three or four in a pot, and stronger ones should have pots to themselves; but there is always danger of suffering for want of water if plants are kept in very small pots, so that many prefer keeping them round the edges, three or four in a pot, to giving them small pots to themselves; and if a man be so situate as not to be able to attend very often to them, they will do better in the larger body of earth; however, a large sixty-sized pot will take a pretty well rooted offset, and keep it growing well until it is full of roots, and the ball should then, without reference to the time of year, be transferred, with its ball of earth undisturbed, to a pot a size larger. All this work should be done before the month is out.

SEPTEMBER.—Towards the end of this month have the frames removed to their winter places, well washed out and dried, and in these frames place your stock; begin by selecting the strongest, and give them room; as you proceed, continue adding the most promising of the remainder, and so go on until the whole

are placed in their winter quarters; from this time begin to be more sparing of water, and consider them liable to frost. The proceedings with regard to seedlings may be continued as before in all respects in which they are applicable, except the transplanting those from the seed-pan to pots, in which they are to be one inch apart; they must be kept from the external air a few days, to get them somewhat established before they are treated like older plants; but as some seedlings grow faster than others, and they keep coming up in seed-pans until every seed has vegetated, the pans should be protected from the slightest frost; and after the first part of this month they should not be removed. Nor are the flowers which come up now to be depended on for character sufficiently to throw any away on account of a deficiency in their colours.

OCTOBER.—A continuance of last month's treatment must be now observed, save and except, that there is still more danger of frost as we approach the winter; and, therefore, preparation must be made for covering in case of necessity. Water must be avoided, except when absolutely necessary; as the less they have the better, until they really want it. In mild weather, the glasses are best off altogether; but dry parching winds, and hot sun, (both of which are frequent in October) will be always better kept off by covering and shading.

NOVEMBER.—This month may be considered winter, so far as the management of this flower is concerned; plenty of air in mild weather, tilted lights, and light shading on bright warm days. Give no more water than is necessary to keep the earth from actually drying; and take particular care that seedlings and seed-pans are not permitted to be dry or distressed for moisture, as from the very small hold they have of the soil, the very surface drying would be fatal to their health and strength, if not to their existence. We must be careful, too, in the removal of yellow leaves, to throw them out of the frame, and to go over the plants several times in the month to get rid of them, for their very presence creates damp and mildew. The frames must not be allowed to accumulate dirt, or falling leaves. Choose mild days to remove the pots out; and well brush out the frames, and the floor of them; for dirt and dead leaves will always be damp, and that is the greatest enemy the plant can have. In open weather, then, mind to uncover the frame, and when the sun is not too hot, let all the plants have the benefit of it. Cover from rains, and in every other respect let the directions for previous months be a general guide. Let the covering from frost be light water-proof calico or canvass, that the light may not be excluded, for no plant can thrive in the

dark; and it should be remarked, that a thin water-proof covering, reaching to the ground all round the frames, is as effective as matting, which is dark; and in most cases much more offensive.

DECEMBER.—This month, like one or two preceding, and January and February which follow, must be subject to the treatment most seasonable; for in this country different seasons change the nature of these three or four winter-months sufficiently to make them change places with each other so far as the weather is concerned. It would be useless here to recapitulate the precautions we have given; and the winter-months' treatment is but a series of precautions. We have little else to do but to point out the past and the January directions as complete guides for the cultivators in the management of the Auricula, and to offer a few closing remarks.

It will be seen that by simple culture the Auricula can be kept in good health and bloomed in something bordering on perfection; that there may be, by close observation, and judicious experiments on valueless plants, some improvement made in time, we do not dispute; that some of the nostrums recommended so indefinitely by our predecessors, may have produced effects pleasing to them, we have no doubt; but we have yet to learn whether our forefathers were good judges of the properties which we now value; whether, in fact, they did not fall into the error into which some younger growers even now fall, and value size, without considering the coarseness as a blemish, is to us doubtful. Indeed, so far as our experience goes back, (which is something like thirty-five years,) the first pair of Auriculas in a show was always the largest; and even in our young days we have seen much more beauty and symmetry in the stands that have been placed low or rejected altogether, than we have in the winning blooms. It would be difficult to say how often we have seen very coarse specimens of Cockup's Eelipse, Grimes's Privateer, Lancashire Hero, and such like, with first prizes against what in our estimation were better flowers. We are, therefore, confirmed at present in our opinion, that taking colour, neatness, health of plant and general properties into consideration, we prefer very much the flowers we have seen grown under the treatment we have recommended, as far superior to those which have been grown stronger, longer, and (for we never saw an exception) coarser. Some of these days we may discover a liquid manure that may, by application at the time the flowers are expanding, increase the beauty and brighten the colours; but were we to begin growing to-morrow, it would be on the principles we have here laid down; for the more

simple the compost and general management the better.

A DESCRIPTIVE LIST OF A FEW SHOW-FLOWERS.

PAGE'S CHAMPION.—A green-edged flower of uncertain texture, and bright colour, apt to crack in the paste, and occasionally very much crumpled or curled. The paste rather thin. The divisions of the petals too often go quite through the colour into the white-eye; the pips generally want flatness, but the brightness of the green edge, the fine proportion of colour, which is a red brown, and the general disposition of the truss, render it very striking, and by growing a number of them we may pick one fit to exhibit.

LEE'S COL. TAYLOR is even now a scarce flower, and considered a fine one. The proportions of colour are good; the edge a pretty green while young. The white-eye or paste good. It is not a good trusser, and we must grow a number to make sure of a plant. It has been hitherto dear, from its indisposition to increase and grow freely; but nevertheless, like all scarce things, a favourite. If there were as many in cultivation as Page's Champion we should see it shown much better.

BOOTH'S FREEDOM.—A very beautiful flower, very green edge while young, and very black colouring. It trusses so as not to show a fine large head, for the footstalks appear too short to enable us to do justice by expanding the truss. It is well proportioned, quite flat; indeed, after a while, it almost reflexes. It is a great favourite, and up to this time not plentiful. It is a fine show-flower, with all its faults.

STRETCH'S EMPEROR ALEXANDER.—A bright green-edged flower, but the green is not lasting. It is rough at the edge, opens very flat, yields a fine truss, is a cheerful looking flower when in perfection, and by growing it strong, and taking out three or four of the smallest pips, seven, which is the requisite number, may be got in sufficient order for showing.

DICKSON'S DUKE OF WELLINGTON—A more sturdy flower than either; and if not so striking as Page's Champion, better in many respects, and much more frequently showable.

DICKSON'S EARL OF ERROL.—A capital trusser, but at present too scarce to be grown with a fair chance of showing against those of which we can grow an unlimited number; but one to be shown safely from one plant if it come in season.

LIGHTBODY'S LORD LYNDOCH.—A successful flower in the country, but little grown near London; nevertheless a desirable flower, and likely enough to be successful here; but the Auricula is as uncertain a flower as any we grow, to get in sufficient good order to

show; and, therefore, a number is required of any sort to make sure of one in the proper season.

WATERHOUSE'S CONQUEROR OF EUROPE.—A very large and inclined to be a coarse flower; but when grown in a moderate way, a noble variety; the grey edge is in many specimens wider than we like it, so as to make the coloured portion too narrow; but when grown of a moderate size it is effective. It is a bold trusser, and makes a noble show when others can be got to match it. It is not plentiful yet, and is best adapted to show as a single plant. The colour is pretty nearly black; the centre good; and it deserves a place in all collections.

DICKSON'S UNIQUE.—One of the best of its class; a fine trusser, with good guard leaves; shows well in front, and has the colours well-proportioned. This has proved itself a good match for several of the most esteemed varieties, as far more certain than any other we know of that is so good among the grey edges.

OLIVER'S LOVELY ANNE.—One of the most lasting flowers in cultivation; but the colour is rarely wide enough in proportion to the grey edge, and on this account a great many must be grown to insure one in good order. It is a good trusser, opens in general very freely, and will remain in bloom fit for showing, for weeks. It is grown by most persons, on account of its lasting qualities, for there are many times when, but for this useful flower, a pair would not be shown.

HEDGE'S BRITANNIA.—A very beautiful grey-edged flower, opening very flat, and while fresh, showable in the best class. The divisions of the colour are occasionally very good; but it will frequently come with the colour breaking right through to the edge; and it often wants the width of edge to make it showable.

GRIMES'S PRIVATEER was, at one time, the most favourite and favoured of flowers. The colour of the marking is a jet black; the proportions rather better than average; the eye and tube excellent, though a little coarse, and the form middling. It is a striking flower, forms a good grey-edged variety, and should have a place in all good collections. The worst fault is coming sometimes crumply, instead of opening flat, and the divisions on the edge of the petal rather too prominent.

KENYON'S RINGLEADER.—In many respects like Privateer, and rarely good the same season; most exhibitors used to take pains with both, on the supposition that they were rarely both bad the same season. The colours are much the same.

FLETCHER'S NE PLUS ULTRA—Is a rich show flower when well bloomed, and we have seen it, occasionally, a very beautiful thing. It is a good trusser, a bold flower, well di-

vided in colours, and as good in outline as the average of them. It is justly a favourite among grey-edged varieties.

TAYLOR'S GLORY.—White-edged bold flower, an excellent trusser, with a good truss leaf. The flowers are the largest and best, in all respects, of the white-edged varieties, when grown in perfection. It does not always open flat; but in kindly seasons, when not checked by cold winds, it opens flat enough to be showy and striking. It is the largest of the white-edged varieties. The foliage is bold, and very mealy, almost white with powder.

TAYLOR'S INCOMPARABLE.—A rougher, but flatter variety, the edge not so good, nor so distinct; a good trusser, and a showable plant, but inferior to Glory in all the essential properties, yet it is often successful in showing for want of better.

SHARPE'S MAGPIE.—Very beautiful black and white colour, well divided, white edge, and black inside, paste excellent, tube good, but the plant too scarce to have had anything like justice done to it yet. Only one year let out, and very few plants to be had at a high price; nevertheless, when there are as many as of other sorts, it will take a high stand among the white-edged varieties.

PROPERTIES OF THE AURICULA.

The properties of the Auricula may be divided into three series; namely, those of the single pip, those of the single plant, and those of a pair as usually shown.

THE PIP.—1. Should be round, large, smooth at the edges, without notch or serrature, and perfectly flat.

2. The centre or tube should not exceed one-fourth of the diameter of the pip; it should be of a fine yellow or lemon colour, perfectly round, well filled with the anthers or tbrum, and the edge rise a trifle above the paste or eye.

3. The paste, or eye, should be perfectly round, smooth, and white, without crack or blemish, and form a band or circle not less than half the width of the tube all round it.

4. The ground colour should be dense, whole, and form a perfect circle next the eye, and on the outer part be finely broken into a feathery edge; the brighter, darker, or richer the colour, whichever it may be, the better the flower; but if it be paler at the edges of the petals (where they are parted into five) or have two colours or shades, it is a fatal defect.

5. The margin or outward edge should be a fine unchangeable green or grey, and be about the same width as the ground colour, which must in no part go through to the edge. From the edge of the paste to the outer edge of the flower should be as wide as from the

centre of the tube to the outer edge of the paste. In other words, the proportions of the flower may be described by drawing four circles round a given point at equal distances; the first circle forming the tube, the second the white eye, the third the ground colour, and the fourth the outer edge of the flower; and the nearer they approximate to this (except that the ground colour, and green or grey edge, run into each other in feathery points) the better the flower.

OF THE PLANT.—1. The stem should be strong, round, upright, and elastic, well supporting itself, and from four to seven inches high.

2. The foot-stalks of the pips or flowers should be so proportioned as to length and strength that all the pips or flowers may have room to show themselves, and to form a close compact truss of flowers, not less than seven in number, without lapping over each other, and all alike in colour, size, and property.

3. The truss is improved if one or more leaves grow and stand up well behind the blooms, for it assists the truss, and adds much to the beauty of the blooms, by forming a green back ground.

4. The foliage should be healthy, well grown, and almost cover the pot.

OF THE PAIR.—1. The pair should be of equal height and size both in truss and foliage.

2. The colours of the flowers should be as much contrasted as possible; a green edge and a grey one, a dark ground and a bright one, a dark green edge and a light green edge, or any other contrast in the colour would be a point over equally good flowers not so contrasted.

Some Auriculas have such a singular tendency to an excess of green edging to the bloom, that it is not unfrequently the case that Oliver's Lovely Ann and the Lancashire Hero come with scarcely a line of colour round the white eye, and among seedlings raised from the best flowers, scores will be found sometimes with a white rather clear round the tube but gradually going off to a mere dust, and the rest of the flower as green as the leaf itself. It is the prevailing fault in the flower we have mentioned, that the green predominates too much always, and sometimes it is fatally so.

One of the blemishes of some of our best Auriculas is, the predominance of colour, a few of our most beautiful varieties to look at, can rarely be shown on that account, for there can hardly be a worse fault than the ground colour breaking through to the edge. The Duchess of Oldenburg would be very beautiful but for this, but it so seldom comes without this fault, that we have grown thirty plants, and yet, when all were blooming, at the proper season, we could not select a plant.

The exhibitors of old thought nothing of carrying a pair of Auriculas, with their heavy pots and boxes to hold them, just as a pair of milk pails are carried, with a yoke upon their shoulders, and the boxes hanging down by two straps. It was nothing uncommon to see seven or eight growers arrive, after this fashion, at the end of journeys of ten, or even fifteen miles—such was the enthusiasm in their day, and, after the show and the usual dinner, trudging home with them again, just as carefully.

We have often remarked that Auricula seed comes up in batches. The first that get strong enough to pot out, forming one season; those that are immediately behindhand, another; and often, when we have cleared a seed-pot of all

that appeared, the top has been laid level again, and another batch has come up, as if they had been fresh sown; nor is it right to throw away the stuff under a clear twelvemonths, for we have known as many come up the following spring as did the first.

As a general though not universal rule, the earliest and strongest of the seedling Auriculas are coarsest and least valuable, the weakest and most delicate are the most beautiful. This accounts for so many fine flowers being known as seedlings, and never being seen afterwards. We treat all alike, while the constitutions of plants are as varied as those of men; and hundreds of good new flowers have been thus lost.

GARDENING CALENDAR FOR MAY.

THE CONSERVATORY.

At this time of year, and onwards through the summer, the Conservatory should be kept as cool as perfect ventilation will allow it to become. A great many of the plants which are permanently planted in the borders, flower at an early part of the season, and unless they are allowed to sink as far as possible into a state of rest during the summer months, they will not flower so satisfactorily as could be wished. There may be some sacrifice of flowers in this mode of treatment, during the summer and autumn, but this is just the period when they can best be dispensed with; and there is no necessity that the Conservatory should be *without* flowers, or even very deficient in quality; but it may certainly now, for a few months forward, be less particularly ornamented, than during the other parts of the year.

Temperature, &c.—Ventilate during the daytime to the full extent of which the structure is capable; the temperature will then be regulated by the amount of sun-heat. At night also admit a portion of air to keep down the night temperature; but never admit the air in currents: no artificial heat is required.

Watering.—For the most part the permanent plants will require to be watered pretty freely; the heat of the sun will cause evaporation to go on pretty briskly from the soil, and unless this be met by the application of water the plants will suffer more or less. When water is applied it should be done effectually, and not in a continual drizzling manner: a good soaking once a fortnight—more or less frequently as the state of the weather may render necessary—will be far better than a more limited application every two or three days. All the plants not in bloom will be benefited

by an occasional syringing or washing overhead with the engine; this may be done once a week, and at this time of year is best done towards evening. The paths, &c. should be sprinkled daily to raise some degree of moisture in the air: if they could be kept damp so much the better.

Shading.—This will probably now become very necessary; it should be recollected that it is only for a few hours in the middle of the day, on those days when the sun is very powerful, that it is required; perhaps, on a clear day, from half-past ten in the morning till half-past three in the afternoon.

Pruning.—Attend to the thinning, pruning, stopping, and regulating of the young annual shoots, so that the plants do not become crowded with weak useless shoots, nor naked and bare at the lower part of the branches: consult what was said at p. 157.

Roses.—Where conservatories are kept cool, some of the China and Tea-scented Roses will bloom in it to perfection during the summer; and add much interest to the building if a few good and distinct kinds are selected: these plants sometimes do not succeed quite well out of doors, owing to the variableness of our climate; under a glass protection they succeed to perfection.

Myrtles.—When large Myrtles and other plants of a similar nature have been preserved in any part of this house, which is often the case, they may now be set out of doors in a sheltered situation; and if the weather should happen to be very congenial for the time of year, a very slight protection, such as a garden mat, or a piece of canvass hung over them, will afford as much protection as they require.

Climbers.—The training, pruning, and tie-

ing in of these must be strictly followed up ; at this time of year they grow very freely, and soon get in a confused and disorderly state, unless well looked after in this respect.

Insects.—Those of the scale or coccus tribe, can hardly be disturbed now in the large plants ; the winter affords both more time and a better opportunity to dislodge them ; the plants, if infested, may however be syringed with clear soot water.

The red spider and thrip are more troublesome at this time of year, and as the weather becomes hot they soon increase rapidly, especially on those plants which have tender foliage : as soon as any are observed, they should be syringed frequently—once or twice a day at least—with clear soot water. If there are any of the green-fly or aphids, they must be destroyed with tobacco smoke or tobacco water.

THE GREEN-HOUSE.

MANY of the commoner plants may be removed from the greenhouses to a sheltered place in the open air, or to cold frames. Potting and propagation may be proceeded with in good earnest. Very careful watering is necessary.

HOUSE FOR MISCELLANEOUS PLANTS.—The propagation of various favourite free flowering plants for blooming in autumn, and the early winter months, must be persevered in ; the plants raised this month will succeed those raised in April. The latter must be frequently repotted, so as to keep them growing freely, and they must get all the air possible in warm weather, so as not to become drawn up spindly, but to grow strong and bushy : to this end, also, they should get as much light as possible. What has been previously said about having the soil regularly and evenly watered, must be attended to ; also the drainage in potting the plants ; and on no account should they be allowed to expand any flowers, until they are really wanted, but they are to be constantly removed in order to throw strength and energy into the plants.

Temperature, &c.—The cooler the house can now be kept by means of perfect ventilation the better for the plants. Allow the sashes and ventilators to stand open night and day, unless the weather is very boisterous.

Watering.—This is one of the most essential of all operations at this season of the year, as far as potted plants are concerned. While the plants are in a growing condition, a deficiency in their supply of water will operate most seriously against their progress ; on the other hand, more than enough is injurious. What has already been said on the subject may be advantageously consulted.

Pruning.—Continue to stop the growing shoots of all shrubby plants, before they have grown too long, in order to keep the plants bushy : the beauty of most plants, so far as habit is concerned, depends almost entirely on this, and a proper exposure to light during the period of their growth. When any old or large plants have got straggling, and it is intended to head them down, the sooner it is performed the better. Plants when so treated, should get much less water until they have shot out afresh ; and they should not be cut down unless they are healthy ; the young shoots when produced require attention ; first, in thinning them out to a proper number, well placed to form a handsome plant ; and then in stopping these selected shoots, to keep them close and bushy.

Potting.—Repot any plants that may have become pot-bound ; and also, those that are being grown on rapidly, when they have begun to fill their pots with roots.

Cuttings may be taken off still, where it is desirable to propagate any of the plants by this mode ; and seeds may also be sown, though they are better done earlier,—that is to say, the plants become better established by winter.

Bulbs.—Early flowering bulbous plants will now be ripened or ripening off ; and should get little or no water, according to their more or less advanced state of maturity ; when they are quite dried off, put them by in a cool dry place, till growing time. Others that are growing must be duly watered, as previously directed.

Chrysanthemums.—When cuttings were put in last month, they should be potted singly as soon as rooted well, into three or four inch pots according to their size, and set for a time in a sheltered (not shaded) place out of doors : they require abundance of water while growing. A few more cuttings may be got in.

Primulas.—In saving seeds of the *Primula sinensis*, choose the plants which produce the best formed, and the best coloured flowers, and save seeds from no other ; any very fine variety is worth keeping over till another year, but generally it is best to destroy them when flowering is over, and raise young plants for another season. A few seeds may be sown now, to follow those in succession which were sown last month. Florists make a fuss about the smooth-edged flowers, but the fringed ones are much the prettiest in an ornamental point of view.

Thunbergias.—These require good large pots, and rich soil ; peat earth and decayed cow-dung are two ingredients they delight in.

Melocacti.—Where the plants have been growing freely in a close moist heat, and have nearly completed their growth, they must be brought again gradually to the temperature of

the green-house. Six or eight weeks of this liberal treatment are about enough for these plants, and the progress they make during this time is surprising ; but they must not too suddenly be removed back to the green-house.

Mignonette.—A few seeds may be sown to obtain some plants for growing as specimens to flower in winter ; these plants may be kept in pits, and shifted on as their roots increase, and the flowers must constantly be removed as soon as they are detected ; they may thus be grown to a large size, so as to assume quite a tree-like character. There is a frutescent variety of *Reseda odorata*, which is better suited than the common, for pot culture, but it is rarely to be got.

Coronillas.—These are nice plants for autumn flowering. Raise a few now from cuttings, and grow them on till the end of the summer in pits ; they will be very ornamental during the autumn and early part of winter. *Coronilla glauca*, and *C. valentina* are suitable.

Cestrum aurantiacum is a fine plant for winter flowering : the plants should be grown on freely now.

Cyclamens.—Sow the seeds of the different *Cyclamens*, in a compost of three parts peat and one of loam, with sand added ; pans or shallow wide-mouthed pots are best for them.

Hydrangeas.—Take off some more of the terminal shoots, with plump buds, and plant them as directed at p. 100.

Succulents.—Offsets may be taken off for propagation. The old plants require to be very carefully watered at all times ; any that may require it may be potted now.

Removing the plants.—Many of the duplicate plants, and all the hardier ones, may be removed early in the month, the most hardy being placed under a temporary protection, and others, rather more tender, placed in pits or frames. There are two principal advantages attending this practice ; one is, that the plants are kept cooler, and in consequence make more steady progress, and eventually become better furnished with blossoms ; another is, that more space is gained in the green-house, which is an advantage to the most delicate kinds, retained there for some time longer. No plant can make its growth so successfully when crowded by other plants, as when both light and air have free play about it. A few plants, which may have been kept in the cooler part of the stove,—not being legitimate stove plants,—may be placed in this house now, and this will give more room to the stove plants, which always, when growing, progress rapidly, and soon get crowded if not occasionally thinned. By the end of the month, if the weather is favourable, the majority of the plants may be taken out ; and many of the hardier species may by that time be fully exposed for the summer.

HEATH-HOUSE.—*Temperature, &c.*—The heath-house should be kept on the cool system, admitting air night and day, but avoiding draughts or cold chilling winds. Syringe the plants freely over head, and keep them regularly watered with soft water, which, as before mentioned, should always be of about the same temperature as the atmosphere the plants are growing in. The plants which are growing freely, may have a watering once a week with clear diluted manure water, or clear soot water.

Ericas.—Some of the duplicate plants, and all the commoner sorts, may be removed to frames ; this will give more room for the remaining plants ; and, perhaps, advantage may also be taken of any spare space, to harden off quantities of the half-hardy annual, and bedding plants for planting out soon. A cool house, such as the heath-house, or miscellaneous house, are the only ones suitable for this purpose. If the majority of the plants are taken from the latter house, perhaps the remainder might be taken to the heath-house, and the other might then be entirely devoted to the purpose here named.

Potting.—Heaths require to be potted at various intervals all through the summer. Select out such as appear to require it, and let it be done without delay ; keep in mind what has been already said of watering newly potted plants.

Pruning.—The strong and free growing kinds of heaths often get very disproportionate in their figure, if not kept stopped back while they are growing. Sometimes, too, when they get too large, it may be desirable to head them down close, so as to form them into close short bushes : this may be done now with the best effect, but should not be done unless the plants are healthy. Give them less water for some time after they are cut, until they begin to shoot out afresh, but they must not be injured by too great a deficiency.

Shading.—Continue the shading of the plants in clear bright weather.

New Holland Plants, and others kept in this house, must be treated in the same way as Heaths, in every respect, such as potting, pruning, watering, shading, removing to pits, or to the open air, &c.

CAMELLIA HOUSE.—*Camellias*.—The plants that have bloomed late, and are just past flowering, should now be re-potted and set growing, as previously recommended for the earlier blooming plants. As it should be an object to maintain a succession of bloom, for the longest possible period, no one feature in the management of the plants will so easily and effectually aid to so great an extent in doing this, as to cause the plants to make their young growth at different periods. The earliest plants in blooming, and making their shoots, and setting

their blossom buds—which are matters of succession—will flower and grow earlier next year also; and the later ones will, in like manner, continue to be later. Thus, by following up this treatment from year to year, habits of early growth and flowering on the one hand, and of late growth and flowering on the other, will become fixed in individual plants, and much of the difficulty of maintaining a succession of bloom will thus have vanished, with no other trouble than a regular attention to this routine. When the plants are growing away freely, they may be watered with clear diluted manure water, or soot water, made by stirring a peck of soot into a hogshead of water, letting it stand till settled, and then using the clear liquid; this is highly conducive to a healthy and vigorous growth, provided all the other points of management, such as potting, draining, watering, syringing, and the regulation of the atmosphere as regards temperature and humidity—formerly explained—are properly attended to and carried out. The very earliest plants, in which the annual growth is matured, and the buds set for next year's bloom, must be removed from their growing atmosphere, and placed in a greenhouse, where there is less heat and moisture, but where also, for a time, they will not be too much exposed: after remaining here for a while, they may be moved to a cooler place, and finally set out of doors in a cool airy (not windy) situation, in order to pass *their* state of rest, previous to being excited into bloom in the early part of next winter. This feature of treatment, perhaps more than any other, should be a matter of every day's attention; for on the proper hardening of the plants when the flower buds are set, depends very much of the success of flowering them; and though several plants were set to grow at one time, it is ten to one if they reached this stage of their growth together.

Temperature, &c.—For the growing plants, continue the temperature of 65 degrees previously recommended. Those in which the bloom is set, may be moved to a house where the temperature is six or eight degrees lower on the average; the warmer part of a heath house will suit them for a time. The atmospheric conditions formerly recommended, must be continued to the plants making growth, keeping them frequently syringed overhead, and the atmosphere quite moist, with but little ventilation, or so managed as not to cause a check in their growth by subjecting them to currents of cold air. The plants will not bear violent transitions of any kind, in any stage of their growth, without suffering serious injury, so that these must be carefully avoided.

Watering.—Next to having the plants properly potted, and the drainage properly adjusted, which is most essential, the manner of watering the plants is the most particular fea-

ture of treatment. When they are well potted, and the drainage has free play, it is indeed difficult to injure them by giving them too much, as the superfluity that may be applied drains away harmless; but even this is not desirable, as the nutriment of the soil is washed away at the same time. The other extreme, that of allowing them to get too dry, is most hurtful to them—if indeed it does not eventually prove fatal; and therefore no pains or trouble should be spared to become *assured* that the plants are not suffering for want of moisture; this first causes the bloom buds and then the leaves to drop off. The manure water recommended just above, especially the soot water, will produce leaves of the most healthy verdure—a condition which adds materially to the beauty of the *Camellia*: it may be given them, if diluted so as to be of a pale brown colour (quite clear), every second or third watering.

Cutting down old plants.—No plants bear the knife better than *Camellias*, if only they are healthy: healthy plants may be cut to any extent with every success; and then if they get tall or straggling, these evils may be remedied. But sickly or unhealthy plants must not be cut, until they are first brought to a state of health, for it must be remembered that cutting in severely is not a means of producing health in the plants, but only of improving their form and appearance, when they themselves have vigour enough to bear it.

Azaleas and Rhododendrons may be similarly treated, but they require peat earth; the latter hardly require so much warmth. Shift the early ones as they go out of flower.

GERANIUM HOUSE.—The temperature and atmospheric conditions of this house, need be kept about the same as recommended at page 159. The plants do not require to be kept very close and warm, but the ventilation should be so managed as by no means to submit them to currents of cold air. Shading must be continued or not according to the state of the weather; if at all bright and sunny, the plants in bloom must be shaded, or the flowers will soon fall.

Pelargoniums.—In potting, pruning, and watering the plants for successional flowering, the same course of treatment must be followed as detailed at p. 159. A few more cuttings, to furnish plants for flowering in the winter, may be put in.

Vinerarias.—When a few suckers or offsets from the earliest flowering plants can be obtained, they may be taken off, and potted singly in sandy loamy compost, in three-inch pots; these young plants will produce the earliest flowering plants in the autumn: they may be grown in the frames.

Fuchsias.—Re-pot the plants frequently, using a rich loamy soil, if young, vigorous,

and free-blooming plants are wanted. The ultimate size of the pot must be regulated by the size and habit of the variety: a plant of *globosa* would attain to considerable size and beauty in an eight-inch pot; *microphylla* would not require one more than half as large to arrive at the same proportionate development.

Calceolarias, in bloom, require abundance of water. Put in some cuttings of the shrubby varieties for winter flowering.

Plants for Winter Flowering.—The treatment of the *Pelargoniums*, *Salvias*, *Heliotropes*, *Calceolarias*, &c., for winter flowering, must be persevered in, as explained at p. 160.

THE PLANT STOVE.

Temperature.—Keep up a strong moist heat in this house, as the plants will now be in a growing condition, and should not be submitted to any check from deficiency of heat. From 60 degrees to 65 degrees is a good medium night temperature; and the day temperature may be allowed to vary from 70 degrees to 90 degrees, by sun-heat; this heat will be maintained, in a great measure, by the influence of the sun, and very little artificial heat will be necessary, and this little should be given chiefly in the morning; very little indeed is required at night, as the temperature will be kept up by the influence of the sun, if the house is closed early, and this heat is taken advantage of.

Moisture.—While the growth of the plants is going on, a moist atmosphere must be kept up: in order to speak with precision as to the quantity of moisture the atmosphere should hold in suspension, a hygrometer is as necessary as a thermometer is to indicate the degree of heat; the new hygrometer of Simmons's is a simple one, and the best suited for gardening purposes. In the absence of such a guide in common use, it must be sufficient to say, that the floors, walls, and pipes, or flues, should be sprinkled with water several times a day; the flues or pipes, too, should be provided with flat shallow pans, or troughs, to hold water continually; in addition to this, the plants must themselves be syringed once or twice a day, except when they are in flower. The evaporation from all these various sources of moisture will keep the atmosphere in a tolerably damp condition, such as will suit the growing plants. This condition of the atmosphere, too, is just the very means of keeping down those pests to plants of tender foliage—red spider, thrip, and similar insect enemies.

Ventilation.—Refer to what was said at p. 160. Admit air so as to keep the temperature from rising too high, but admit it evenly and regularly over the house, and not in large bulk, or in strong currents.

Watering.—The utmost attention must be paid to keeping the plants regularly and evenly watered, while in their growing condition. Plants at rest require either a less supply, or a total cessation for a time, according to their habits: see p. 160.

Potting may be continued in the case of those plants that are required to be grown to large size. Permanent ligneous plants seldom require more than a good annual shift; but herbaceous, or free growing soft-wooded plants, as well as annuals, may be repeatedly repotted, if the object is to grow them to large size, or to a fine state of development.

Pruning requires to be attended to in the case of stove plants equally as much as with green-house plants, already noticed.

Climbers.—It is just necessary to repeat that climbing plants, of all kinds, require constant attention in pruning and training.

Dysophilla stellata.—The plants of this rare little herbaceous plant, reared in the earlier part of the season, must be carefully shifted, and submitted to a moderately strong moist heat; and under judicious management they will flower towards the latter end of the summer.

Gloriosa.—If potted as directed in the early part of last month, or sooner, these will require to be moved to larger pots, but it must be done very carefully, as their roots are very delicate.

Nelumbiums, and other aquatic plants, require good attention. Change the water frequently, and give both roots and leaves abundance of room; they never do well if they are crowded, for, like most other plants, a free and perfect action of the leaves, as the organs of nutrition, is essential before a satisfactory display of flowers—the organs of reproduction—can be realized. Many of the aquatics, from the large size of their leaves, take a good deal of room.

Palms.—Syringe these noble plants freely and frequently, for they delight in a moist atmosphere and a high temperature. When any of the plants are now observed to be commencing growing, give them larger pots, or tubs if necessary; and if they do not require this, let them have a top-dressing of rich soil, and during their growth, occasional waterings with clear diluted manure water.

ORCHIDACEOUS HOUSE.

We can add but little to what is stated at p. 162, as regards the temperature and atmospheric condition of this structure: at the present time, and for some months to come, the plants ought to be in a free growing state, and to aid them in their progress, a moist and warm atmosphere is indispensable. This structure requires very little ventilation indeed;

a small portion of external air may be admitted when the weather is very hot, in order to keep the internal heat from becoming excessive, but on no account must the plants be subjected to a current of cold air. Day temperature 70 to 80 degrees; at night, 60 degrees.

Shading will become more and more necessary with the advance of the season. Whatever means of shading is adopted, it must not be too thick, for a very slight shade will break off the sun's rays. If a moveable shade is adopted, it should not be let down when there is no necessity for it.

Aerides.—These now require a very strong moist heat to cause them to grow freely, which will commence from the present time onwards for a month or two, and continue to the end of September; they must then be kept cool and dry, till the beginning of March, when, if placed in a strong dry heat, they flower freely.

Cymbidium.—The upright growing ones may be potted, if they are growing, but they need not be elevated above the soil. Some of the species have pendant spikes; these look best in baskets.

Celoglyne.—Some of these flower twice in the season. When the first blooming is over, the plants should be kept growing, and when this growth is completed, they produce other blooms. The following kinds possess this property:—*C. Wallichiana*, *C. maculata*, *C. Gardneriana*, &c.

Cammarotis.—A very pretty plant; requires the same kind of treatment as *Aerides* and *Vanda*.

Dendrobiums.—Those which are commencing a new growth may be repotted, or if growing in baskets, and require re-arranging, it had better be done at once. They should make strong growth, and then should be well matured.

*Oncidium*s.—Pot those which are making fresh growth before it is too much advanced.

Paxtonia rosea.—A pretty terrestrial species; it may now be repotted and grown on vigorously.

Saccolabiums need treatment very similar to that which is given to *Aerides*.

Stanhopeas.—Where these are about making growth, pot them, or renew the soil about them, and let them be grown on freely.

Vandas require similar treatment to *Aerides* and *Saccolabium*.

Zygopetalums.—Where any of these are now growing they must be potted; they require a temperature of from 65 to 75 degrees. In potting, keep the pseudo-bulbs well elevated above the pot, as shown at p. 58.

General Culture.—Many of the plants which do not require repotting, will be greatly

benefited by a surfacing of fresh peat earth, the old soil being carefully removed. The growing plants must have a liberal supply of water, and may be frequently syringed. The plants in bloom must not, however, be wetted over head, but kept in a dry part of the house, and where it is not too hot: they remain a much longer time in perfection when this is attended to, than if they are placed in a very hot or very moist situation. They keep very well in living rooms, when in bloom.

FORCING-HOUSE FOR FLOWERS.

Temperature.—The temperature of the external atmosphere will now be rising so high that little trouble will be necessary to maintain the internal heat of this structure. Give all the air possible, so that it be not admitted too roughly. From 60 degrees at night, to 75 degrees by day, will be found a useful mean temperature.

Watering must be strictly attended to, for as the heat increases, and the supply of air becomes greater, the more quickly will the previous supplies of moisture become evaporated: it is equally important that no stagnation should occur when water is applied.

Insects must be eradicated wherever they appear. Fumigate twice, or oftener, if necessary, during the month.

Achimenes should be repotted, or otherwise encouraged, and pegged or trained out so as to completely cover the pot or basket in which they are grown.

Gloxinias, *Gesneras*, &c. should also be shifted, if necessary, kept near the light, and closely watched to see that they do not want for water.

Crassula fulcata.—Remove such as are near flowering to the coolest part of the house, or out altogether. Take off the tops of any out of flower, and strike them singly in small pots, plunged in heat, taking care not to rot them with too much water at first. Shift them as soon as they require it, and plunge them again, growing them as quickly as possible.

Pinks, &c.—The pipings of these plants, put in last month, ought to be sufficiently rooted to be planted out during this. Prepare a warm, light, rich border, and after they are out keep them strictly clear of weeds, and the ground well stirred about them: give them an occasional soaking of liquid manure, and be careful that they never want for water at any time.

Pelargoniums.—Cut down any plants which were forced early, and have perfected their growth, since which, they should have been kept very dry; and those now cut in, should be kept so too, until they attain a fresh growth of half an inch.

Chinese Roses.—Propagate these and the hybrid varieties allied to them. It should be done in considerable quantity, as they are very beautiful, and very easily forced at almost any season. The Chinese are said to use the Banksian Rose as a stock for others, merely cutting the shoots of that species into pieces of the requisite length, inserting the bud or graft, and then planting them.

After Treatment.—Encourage the growth of all the forced plants by all available means: repot any that may require it, but keep them all in pots of the smallest possible size. Let them have the benefit of free exposure as the temperature advances sufficiently for them to bear it.

PITS AND FRAMES.

Tender Annuals.—Keep them growing freely, as near the light as possible, in frames or small low pits, until they get too large for such places, when they must be moved to the greenhouse or stove, as they may be more or less tender. Pot them as often as the roots thicken in the soil, until they are approaching a flowering state, when they must be nourished by clear manure water, not over strong. Sow for succession if they are likely to be wanted.

Balsams, Cockscombs, and Globe Ananths, together with Browallia's, Egg-plants, &c., all keep best when kept in dung frames, or low pits, as long as they can be accommodated there, that is, until they get too large; they must then be removed, either to the stove, or a warm moist greenhouse.

Alpine Plants.—These need little care now beyond keeping them regularly watered, and placing them in a cool (somewhat shady) place. They may be potted, or propagated, if requisite. Division of the root is the most usual mode of propagation.

Propagation.—Propagate continually a supply of all the half-hardy plants for planting out; they come in handy, even if not expected to do so, at the end of the season, for filling out vacancies where any of the kinds fail before the mild weather of autumn is passed away, which they are liable to do, especially the annuals.

Half-hardy Annuals.—Sow some to keep in pots to use as "stop gaps," if occasion requires.

Half-hardy Bedding Plants.—Consult the remarks in reference to these plants, at p. 164. Many may be planted out during this month.

Greenhouse Plants.—Many of the early flowering heaths, and New Holland plants that are past blooming, and other green-house plants of the common and more hardy kinds, as well as many duplicate plants, may be accommodated in the cool pits, in which situation they will grow admirably for a time, previously to

being set in the open air. When the Camellias, tender Rhododendrons, and Azaleas have nearly matured their growth, they may be removed to one of these pits, provided it is kept rather close, and as warm as practicable from the influence of sun-heat. These plants must not be removed from the forcing-house direct to the cold pit, but must be kept for a week or two in the intermediate temperature of a green-house. The potting and general treatment of green-house plants may go on just the same when placed in these pits, as when they are kept in the green-house.

WINDOW GARDENING.

Most of the half-hardy plants which are selected for this purpose, such as Geraniums, Fuchsias, Calceolarias, &c., may be permanently stood out either on the window ledge, or in the balcony, some time during the month. They should have been moved out doors daily for some time past, as already recommended, being taken inside at night when the weather is likely to be frosty. If they have not been already put into their blooming pots, it may now be done. Plants for this situation require to be well potted, and also to have proportionately large pots, for when the pots are small, they are very liable to suffer material injury from the rapid drying up of the soil during hot days. Lumps of charcoal, free stone, or similar porous materials, should be mixed with the soil, in order to serve as reservoirs of moisture, which they do by absorbing a considerable quantity, and giving it out to the soil when it becomes drier than themselves. For young plants of this nature,—which by the way are much the best,—pots of about eight inches in diameter are a good medium size; the plants look more orderly when they are selected as nearly corresponding in size as possible, and for the same reason they should be placed in pots of equal size, where this is at all practicable.

Climbers.—Climbing and trailing plants are quite as effective in the situations of which we are now treating, as in any of the various ones to which they are introduced. They have a very pretty effect when trained up the sides of the window frame,—the purple *Convolvulus Major*, or the blue *Maurandya Barclayana*, or its white variety, or the yellow *Tropæolum aduncum*, are very appropriate and effective when nicely contrasted. Similar plants also look well when they are suffered to grow loosely about the balustrades or palisades of a balcony. Those of trailing habit, again, look very pretty when allowed to hang down from the window ledge, or the lower edge of the balcony. But these plants must be placed at the commencement of the year into pots large enough to afford scope for their roots through-

out the season ; indeed, with almost all of the summer blooming plants this is the case, but it is more urgently so with those of climbing and trailing habit, as they are not so readily moved when advanced in growth. Among the climbers which would be sure to please, we may, in this place, mention a variety of the *Convolvulus Major*, which has flowers variously striped with a pretty clear blue on a white ground ; the variety is, we believe, to be purchased separately in the seed shops.

The remarks at pp. 164 and 165 on this subject may be consulted with advantage ; and if what is there recommended is not already carried out, an early opportunity of doing so should be embraced.

ROSE GARDEN.

Grafted and Budded Plants.—This month the greatest diligence must be used among the grafted, and the last year's budded plants ; they should be examined every two or three days for suckers from the root, and growth from the stock : their very existence in some cases, and their healthy growth in all, depends on the removal of all growth whatever, anywhere but from the bud itself, or the graft itself ; and a vigorous growth of nearly two or three days in a strong stock shoot, has been known to kill a bud that had sufficiently united to ensure its success, had it not been thus deprived of all nourishment.

Stakes and Fastenings.—These must be examined and repaired where they are deficient or unsafe. The wood of those buds which started last year must be so fastened as to prevent the wind blowing them out when they grow ; the best way to do this, is to tie a stick to the stem of the stock long enough to reach above it, and to this tie the growing part of the bud, so that the wind shall have no power over it. The suckers that come from the root must be regularly grubbed up, that is, the earth removed down to the place where it joins the root, and part of the root removed with it ; if, on turning the ground away from it, you find it comes from the stock under ground, cut a thin slice of the stock along with it, for the sake of removing all the incipient buds that would be constantly plaguing you if the shoot is carelessly cut off. You should now go over all standard roses, and rub off the shoots that are superfluous, leaving on only those where you want branches and bloom, for by rubbing off all superfluous shoots, the remainder grow more vigorously, and the blooms come much larger and finer ; in doing this, all the shoots that grow inwards should come out, and also when two are growing parallel to each other and too close, one should be rubbed off. Potted China roses should be shifted into larger pots, when their roots reach the side of the pots ;

the soil should be rich, such as decomposed loam and dung in equal quantities, if superior growth be required. Trim the plants pretty close, and in all cases remove any exceedingly vigorous growth. China roses against walls, and house fronts, require to have all the bare wood got rid of, therefore, when any younger can be brought down into its place, such wood may be cut away at once, or if it cannot be got rid of, it may be shortened to half its length, and, perhaps, the rest will throw out young wood all the way down ; it is not an uncommon thing. This month there is generally plenty of bloom on the China roses in warm situations, but this tribe of plants will bear the knife at any time ; they will also bear budding and grafting, root-grafting and bud-grafting at almost any time of the year. The cuttings that are struck in the frames, and not planted out, may be potted or transplanted in the open ground. Syringing the out-door roses, and fumigating the in-door ones, whenever there is the least appearance of green fly, will be found requisite, and will save a good deal of trouble hereafter.

Seedling Roses.—Those in pots must be examined to see that they have plenty of room to grow, that is, that the roots are not matted ; if they be, they must be shifted. Seedlings of last year, budded, must be protected against wind by tying them up as they grow ; the seed sown in pots must not get dry, moss may be lightly laid over the surface and kept damp.

THE FLOWER GARDEN.

Alyssum saxatile is one of the very best hardy, early flowering, bedding plants : it is of dwarf, compact habit, and flowers very profusely, producing a fine display, with its bright yellow blossoms. Take off cuttings of the young leafy shoots, as soon as they can be got, and root them under hand-glasses, ready to plant out in the autumn ; or pot them and keep them in the cold frames till early spring, before planting out.

Anemones.—Water and shade them as may appear necessary according to the state of the weather. If the ground is wanted, they may be taken up carefully, when the bloom is past, and planted in the reserve garden.

Antirrhinums may be planted out ; these are raised from cuttings in the autumn. There is now great variety among them. Examine the seedling plants carefully ; and as they flower, if any distinct one appears, take care of it.

Annuals (half-hardy) that have been raised under protection must be prepared for planting out, by gradually inuring them to thorough exposure, in the same way as directed for other half-hardy plants. Sow others for succession.

Annuals (hardy).—Continue to sow a few seeds of some of the most distinct and showy, to keep up a succession and variety of bloom through the latter part of the summer. When they have been sown in beds for transplanting, and are now large enough, they may be moved to where they are wanted to flower, choosing either a showery day, or doing it in the evening, and afterwards well watering them.

Aquilegia.—Sow a portion of seeds to obtain flowering plants for next season. Look after the best varieties when they are in flower, and save seeds from them. There are several very distinct kinds, of which *A. glandulosa* and *A. Skinneri* are among the handsomest.

Aubretia deltoidea is a dwarf hardy plant, and blooms early in masses; the flowers are purple: it may now be extensively propagated, either by cuttings or division, for flowering next spring.

Auriculas.—Pick off the decaying flowers, unless the seed is wanted, but do not remove the main stalk, but let that die away naturally. Give the plant more exposure, when the bloom is past. If seed is wanted leave one or two of the earliest and strongest pods.

Bulbs.—Where the leaves of *Crocuses* and *Snowdrops* are in the way of other plants, and it is not intended to take them up, take them, two handfuls at a time, and give them a single tie together; this keeps them off the ground; and although not quite so well for the plants as leaving the leaves fully exposed, yet it is very much better than cutting them off, as is too often done. Water the *Hyacinths*, and other bulbs in bloom, if the weather is dry. As the different kinds go out of flower, if the ground is wanted, they may be carefully taken up, and removed to the reserve garden.

Calceolarias for beds should be finally hardened off, and treated as *Salvias*.

Carnations.—Those in pots require to be well attended; they must not be over watered, and probably will require but little water, as the large bulk of soil keeps moist for a long time. The beds should be stirred up, and hoed occasionally, and perhaps watered, if the weather is dry, but they must not have too much wet. Set traps for earwigs.

China asters may be sown for a succession.

Dahlias.—Plant out the seedlings towards the end of the month, in any by-corner. As they chiefly turn out to be rubbish, they are hardly fit for any other place, unless there is plenty of spare ground. The blooming plants of choice varieties will probably bear planting out by the end of the month: it should be done if the weather is at all favourable. Should there be any subsequent risk of frost, protect them by inverting a pot over them at night. Watch for and destroy earwigs in-

cessantly, for if not removed they do incalculable injury.

Draba nivalis, is a handsome hardy plant for forming a mass of white in flower gardens, during the spring months. It may be propagated extensively now from cuttings, planted in a north aspect.

Gravel walks.—Sweep and roll these frequently; the simple operation of sweeping is often badly done, being usually performed far too heavily; they cannot be swept too lightly.

Greenhouse climbers.—Many of the half-hardy climbers, as *Lophospermum*; *Rhodochiton*, *Maurandya*, *Calampelis*, *Cobaea*, &c. are exceedingly useful out of doors, to cover fences, walls, trellises, and other similar situations; they require hardening off before planting out, the same as other half-tender plants.

Half-hardy Plants, generally, must be thoroughly hardened off and prepared for planting out by the end of the month, or as early as the season will permit. Much of their success depends on their being *gradually but thoroughly* inured to bear exposure to the open air. Bad weather for planting out should, of course, be avoided: it is better to wait a little than to risk too much.

Hardy creepers.—Carefully attend to these, and keep them properly regulated, and tied or nailed in, before they get into confusion.

Herbaceous perennials.—Many of the early flowering kinds, if cut down as soon as their beauty is gone past, will frequently throw up another lot of flowers; and it is ten to one if they do this if the old stems are left until they are quite dead before they are removed. Thus, we have an instance of neatness and good order bringing satellite advantages in their train.

Hyacinths.—Shelter the beds from heavy rains, as the plants advance towards blooming, and while they are in bloom. When they are past blooming, remove the seed pods, unless it be a few from which seed is wanted. Take up the roots, and carefully remove them to the reserve garden, if the ground is wanted; but if they are where this can be avoided, it will be better for the roots.

Lawns.—Mow every week, if possible, or at the farthest once a fortnight; in fact, they can hardly be either rolled or mown too often.

Lobelias.—The perennial species which were separated and potted a month or two back, and have been kept in frames, may now be planted out, giving them a rich loamy soil, and a situation somewhat damp and a little shady.

Mimulus.—These may be planted out, and make showy beds; they also bloom early, if they have been forwarded in pots; they prefer a loamy soil.

Narcissus.—Shade the best of the plants, and protect and water them, if necessary. Treat them the same as Hyacinths, as far as regards removing them.

Pansies.—Top dress the beds with leaf mould, or very much reduced manure; plant out the rooted cuttings, to make new beds; and continue to put in other cuttings for a succession. These always flower best when the plants are young; and this mode of propagating is generally better than dividing and replanting them. Look out for a few pods of seed from the best of the flowers, properly impregnated.

Pelargoniums for beds and borders, including the various scarlet, variegated, ivy-leaved, and other varieties, should be hardened off and prepared for planting out, as soon as the season will permit.

Petunias.—These may be got together under temporary frames or shelter, as a final move preparatory to planting them out in the beds, which may be done as soon as the season will permit. Continue to propagate for later flowering, if more plants are wanted.

Picotees require the same kind of management as Carnations.

Pinks.—The plants (last year's pipings) should have all the flower stems removed but the strongest, and the buds reduced to about two on each stem. Give the beds a top-dressing of leaf mould or decayed manure; and if not already done, let the plants have plenty of water, if the weather proves to be dry.

Polyanthuses.—When the plants have done flowering in pots, plant them out into rich loamy soil, where they are a little shaded during the middle of the day; watch carefully against slugs and snails.

Primroses (double) should be planted out of the pots in which they have bloomed, into borders of rich loamy soil, in a cool place, where the sun does not shine on them during the middle part of the day.

Protection.—Protect any plants fresh put out that may be a little tender, by inverting a flower-pot, or a close basket, or anything, in fact, that may be at hand, over them at night, removing it in the morning, after the frost has passed away. A very slight protection often effects a vast benefit at this juncture.

Ranunculuses.—Shade and water those in flower, or approaching that condition.

Rock-work.—Plants on rock-work require care in renewing the soil and making it firm about the roots of the plants; thinning them out where they are growing too thick; and clearing them, both from seedling weeds and self-sown flowering plants. Fresh plants may be introduced in the early part of the month.

Salvias must be prepared for planting out, but they are more tender than many other plants of this class.

Tulips.—Protect these both night and day; this may be done by roofing over the beds and covering them with thin canvass, or by having a more perfect stage, sufficiently large to walk under, with canvass roof, and side blinds; do not, however, cover them up too closely. When the bloom fades, all this covering must be removed. Except in the very few flowers from which seed is required, break off the seed pods at the top of the stalks, as soon as the petals have fallen.

Verbenas.—Place these under temporary shelter, previously to finally exposing them. Continue to propagate, if required.

Wall-flowers.—Get in early more cuttings of the double varieties, to secure successional plants.

Water the plants generally, especially newly planted ones, if the weather should prove dry and hot: apply it at those periods when the atmosphere is dull and moist.

THE KITCHEN-GARDEN.

THE chief thing to be attended to here, is to have the ground well prepared for the crops: considerable skill and forethought is required to avoid two crops of the same kind, or even of the same tribe, following each other successively; and a regular rotation, if practicable, should be attended to. Trenching, deep digging, and keeping the crops already planted, clean and healthful, by a frequent stirring of the soil; and pricking out nearly all sorts of plants, so as to forward them, that they may be ready for lifting with a good ball, into the places intended for their reception, are the chief things to be done.

Artichokes, both Globe and Jerusalem, can still be planted, as directed last month.

Asparagus.—See that the cutting of this vegetable is not overdone, particularly in the young plantations; the demand will be limited as soon as peas are gathered: it is entirely unnecessary to use any means of blanching it, as when green it is much preferable; strict attention is now requisite to keep it free from weeds, by hand weeding or very careful hoeing; and the present is a good time to saturate the beds with guano, or sheep's dung, &c., in the form of a clear liquid.

Beans.—Attend to topping them when they have set a sufficient quantity of pods: make another planting for a late crop. Hoeing and earthing up will be found beneficial.

Beet.—A small sowing may still be made; the main crops should be thinned to about six or eight inches apart; when they have made three or four leaves, they will require to be again looked over.

Brocoli.—Main sowings can be put in, as before recommended; and have them all distinctly named and dated: this should also be

done when they are planted out. Those which were early sown should be pricked and planted out; they require a deep and rich soil, and should be put from two to three feet apart, giving waterings at the root immediately after planting, and repeating it, if the weather is dry, until they have taken root.

Brussels Sprouts.—Make another sowing, and prepare an open situation for planting out. The soil must be good, but not so rich as for brocoli: plant about the same distance apart, say two feet and a half each way, and have a good quantity of them, as it is a useful vegetable; defer the main planting until June.

Borecole.—Sow, if not already done, and plant out; the width according to the state of the ground; two feet generally does.

Cabbages.—Make another sowing to come in in autumn: transplant those sown early; for the dwarf sorts, eighteen inches and two feet apart will be enough; earth up the advancing crops.

Capsicums.—Towards the end of the month they may be planted against a wall, in a warm situation, protecting them for a few days with small branches of any sort.

Cardoons may now be sown, in a trench as for celery: thin them out, to about one foot in the row, and as they grow, earth them up in dry weather, like celery.

Carrots.—A main sowing can yet be made. The early crops must be thinned to four or five inches apart; the Dutch hoe should be frequently passed amongst them.

Cauliflowers.—Plant out, for succession crops, choosing showery weather, if possible, for the operation: they must be watered after planting, and will be found to come in seasonably if planted on cool and shady borders. Make another sowing about the end of the month. It will be found advantageous to water in growing weather, with liquid manure, before earthing them up; and by looking over the early crops where the flower is getting too forward, and breaking in a leaf or two, so as to shade it, it will be found to keep longer.

Celery.—Continue to prick out into rich soil, from which the plants will lift with a ball: a few may be planted out in trenches, making always double rows instead of single. The trench should not exceed one foot in depth, and dig in six inches of good rotten dung, watering well and keeping the plants at eight inches apart, taking care to plant alternately; the common mode of trimming the leaves and roots is very objectionable, and when plants are properly treated they never require it.

Cucumbers, for pickling, can be raised under a hand-glass, on a warm spot, and may be exposed towards the middle of next month,

when, if kept thin, and season is favourable, they will yield abundantly.

Endive.—A small sowing can be put in and may be useful, as being early, but it will be apt to run to seed: the green curled is a good sort.

French Beans.—Two plantings of these should be made this month: the dun and speckled are excellent sorts.

Gourds.—Plant out at the end of the month, on a warm and rich spot.

Herbs.—Any sorts that are required can be sown and propagated this month.

Hyssop and Horehound are most useful medicinal herbs; and can be increased by division of the roots.

Leeks.—Transplant into a rich and well-manured soil, fifteen inches between the rows, and a foot in the row; the leaves should not be shortened, and, as noticed last month, they need not be firmed at the root like other plants, only allowing a very small quantity of earth to drop in with the plant.

Lettuces.—Sow every ten days or so; plant them out in every spare corner, at one foot between the row, and ten inches in the row; tie up the open sorts for blanching, choosing a dry day for the operation.

Onions.—When the winter onions are likely to run, pick out their heart bud; the bulb is also greatly assisted by bending over the stems, which can be quickly done with the back of a wooden rake. The hoe should be frequently passed over the ground, as well as among the spring-sown crops; and weeding thoroughly must be looked after; thinning the onions to four or five inches apart, may be proceeded with.

Onions, for pickling; sow the silver skinned very thick, close by the walls; leave them unthinned, and unwatered.

Peas.—Sow every fortnight; earth and stake up; stop the leading shoots when in blossom, and be careful when gathering not to break the stems.

Potato-onions, are treated as Shallots; plant them now and keep them ten inches apart.

Potatoes.—Hoe and earth-up the early crops; they can still be planted; those intended for seed, have been recommended by some to be kept late, and taken up green, but many now object to this plan.

Pumpkins should be planted towards the end of the month, where they are to remain in a rich soil.

Radishes.—Sow every ten days.

Salads of all kinds should be successionally sown this month.

Sea Kale.—Clear off all the dung and straw used for forcing; this is very useful in making up Mushroom-beds, when quite in a dry state. The young and superfluous buds of the Sea-Kale should be well thinned.

Salsafy.—Sow now, in the same way as *Scorzonera*, thinned to five or six inches in the row.

*Savoy*s may be sown now, if not already sown; plantings may also be made at about two feet apart each way, between the plant.

Scorzonera.—Sow in rows fifteen inches between, and thin out to four or five inches.

Spinach.—Sowings must be made where the ground is light, every fortnight; the open spaces between the Peas, Cauliflower, &c. is often used for that purpose; but if plenty of ground is at command, it is better to have it in rows by itself, fifteen inches between, choosing rather shaded places for it in the heat of summer; several kinds of Spinach have been recommended and tried, but they are not likely to supersede the varieties of *Spinacia oleracea*.

Tomatoes.—The chief success of these depends on getting them well forward and unchecked, before being planted out against a wall, which can be done the end of the month.

Turnips.—This is a good time for making a large sowing of Turnips, sowing immediately after a shower; thin the advanced crops with the hoe, as directed last month, and this will require to be repeated.

Vegetable Marrow, should be raised in a little heat and treated as gourds; they can be planted out in a warm and rich place.

General Remarks.—In preparing for planting it is common to make the measurement of the distance between the rows, by means of two sticks cut to the exact length; two persons can plant much more expeditiously together than when separate, as one plants each end of the rows, and is at hand to shift the line; when the line is set they commence at the outside and meet in the centre. In planting, each takes two rows, and puts in the plants at right angles; it is of consequence that when the plant is put in, the soil should be well broken; when the ground is fine, there is no great need for pricking out, except for forwarding the plants. Most of the crops will be benefited by manure water, given in showery and dull weather; and if the weather proves dry, the seed-beds should be well watered previous to drawing the plants.

CUCUMBER AND MELON FRAMES.

Cucumbers.—The bearing plants will be benefited by occasional waterings with liquid manure; keep up the heat by linings, and by "shutting in" some of the sun heat at the latter end of the afternoon; from 65 to 70 degrees is a good medium by day; give air to keep the temperature from getting much above this point. Thin out the vines regularly; it is never desirable to let them run wild; do

not let the plants bear too many fruit at one time, for when this is the case, they become overdone, and do not bear at all for some time, till they gain fresh vigour. Sow for succession, or propagate desirable kinds, by cuttings.

Melons.—Plant out the principal crops in frames, after early potatoes, salading, &c.; and also fill the frames used for protecting the half-hardy plants and preparing them for planting out in the flower garden; a very little preparation will be sufficient; put in a foot or two of hot dung, and a couple of feet of good strong loam made rather highest in the centre; or a heap may be made in the centre, and the remainder added at some future time. Attend to what is stated at p. 170, in respect to training and stopping. Perhaps with this little amount of preparation so much heat as 70 degrees will not be experienced, except during hot days, but enough heat will be produced to carry on the plants by the aid of sun-heat.

FRUIT GARDEN.

It is of the utmost utility to keep every space and corner clear of weeds, and open and friable, though it is by no means necessary or even desirable to have a fine surface. When water is given let it be done bounteously, and have the soil stirred for the purpose; an advantage accrues from mulching, as the ground is not so subject to crack and dry up quickly.

Apples.—Attend to removing the first signs of caterpillar; thin the fruit, divesting the tree of all the small, ill-formed fruits, without hesitation. Young trees in particular should be carefully disbudded, and if trained, they must be tied or nailed in, as the case may be; the strong breast wood should be stopped when four or five inches long.

Apricots.—Disbudding or thinning out the young shoots, should now be strictly attended to, so much so as to render winter pruning very light indeed. The bud or shoot, at the base of the young shoot, with the leader, will be generally enough to leave; if the young wood is laid in about five inches between each shoot, it will do. The fruit must be well thinned, but as Apricots do for tarts, it may be well to have an eye to that, and regulate accordingly.

Cherries.—Free the trees of all diminutive and small fruit, and keep the young shoots free from danger, by pruning and nailing them in; for destroying insects, fumigations of tobacco, and syringings with tobacco-water, and dusting with Scotch snuff, and slaked lime after a dewy morning, have each separately a good effect.

Currants can be assisted by thinning the young wood moderately.

Figs.—All superfluous and misplaced young

shoots should be removed; and where short shoots are wanted, give the point of the shoot a squeeze, which is better than cutting it.

Filberts.—Remove all suckers, and keep the centre of the tree open.

Gooseberries.—Keep a sharp look out for caterpillars; a dusting of soot, wood-ashes, and lime is allowed to be good. Thin out the finer sorts, both in wood and fruit.

Grafts should be carefully protected against wind, by being tied to, and supported by good strong stakes.

Nectarines.—As soon as green fly appears, fumigate the trees; if red spider is seen, keep the atmosphere damp and wash parts of the wail with sulphur and soft soap; disbud and thin, as with the Peach.

Pears.—Stop and thin out the breast-wood, with the bad-shaped and thickly set fruit; by stopping the shoot when a few inches long, the danger of the lower buds starting is avoided; keep the young wood of the leaders from being injured by having it properly nailed.

Peaches.—Keep thinning regularly, and not much at a time; the fruit should be about a foot from each other, at the final thinning; but this depends much upon the state of the tree; if too luxuriant it might be checked beneficially by a heavy crop, and if unhealthy, the reverse. Where young wood is wanted, top the nearest shoot, which will induce it to shoot out; nail in the wood of young trees at full length, and when the shoots are not growing equally, depress the strong and raise the weaker ones to a more erect position; this will equalize their growth.

Plums.—Treat similarly to Peaches.

Raspberries.—Divest of all the wood, not likely to be required for bearing next season.

Strawberries.—Strew short grass between the rows, and give thorough waterings; tie up the flower stalks to neat stakes, which assists their colouring and flavour, and helps to keep the fruit clean.

GLASS AND GLASSES FOR HORTICULTURAL PURPOSES.

SAMPLES of Glass supplied by Edwards and Pell, of Southampton Street, give us a very good notion of what we may expect in the way of "a cheap and good article from abroad." Plates pretty nearly a yard square may now be had at sixpence-half-penny per foot, and of such thickness as would stand a good blow, and thicker still at eightpence; so thick indeed, that it is more like plate than blown glass, and clear enough to do for the glazing of picture frames. In conservatories, this glass is much better adapted than any

thing we have seen at the same price, for after all, the cheap glass that is cast in plates is not clear, and does not do justice to a neat building. In addition to this article, we have seen from the same establishment, strong bell glasses for propagating, and taller ones for shades, equally cheap in proportion, and not likely to be half such a tax in the breakage. Indeed, it is the glazing with thin glass, and the using of thin propagating glasses, that cause so much destruction. They hardly bear the ordinary use without breaking, the slightest violence destroys them, and careful or careless, the breaking of a good many is inevitable. On this account we recommend the thickest for large conservatory or dwelling-house windows, and the strongest of the bell-glasses for propagating. The shapes are various, but they are the best which do not exceed their diameter in height. It would be well to get some done which do not exceed half their diameter, because it is desirable that too much air should not be contained in the glass; they are principally required to stick cuttings under, and the object is to prevent evaporation going on too rapidly; on this account they ought not to be deeper than is likely to be required for the cuttings at their full growth; all above this is unnecessary, and much more than this is mischievous, besides which tall glasses would often be in the way in frames. However, there must be some of all sizes. There are other houses now supplying excellent articles, in the way of glass for windows and horticultural purposes, each in their way meeting the builder upon liberal terms, and exemplifying the advantages of the tariff, in the greatly reduced prices, and we might say, perhaps, a greatly superior article to any thing that was made during the period in which the heavy duty existed, and which being levied by weight, occasioned glass to be manufactured lighter and thinner than was at all compatible with real usefulness. It is true, that at that time pieces below a certain measure might be had cheap, but cheap as it was, the breakage occasioned by its extreme weakness made even them come dear. The frost of the winter usually cracked a great number of squares, for the lodgment of a drop of water between the squares where they lapped over would, after freezing, snap the fragile stuff, and hundreds of squares every season were thus cracked and broken. The great advantage then of the repeal of the duty is, in our being enabled to get much more valuable glass for the same money, not in getting the rubbish of glass cheaper, for the thin window glass can scarcely be worth making now. In fact, the motive for using small panes of glass no longer exists, as large squares,—or in houses with narrow sash-bars, long squares,—are to be had as cheap as

less ones, and the thickness of the glass gives all the strength that is required, however large the square. Those who have to choose glass for horticultural purposes, should bear in mind, that clearness is as desirable for that as for any other application. All the light is wanted in winter time, even for a common garden-frame; and wavy, or knotty, or imperfect glass is improper for plants, for it is desirable to see them when they are growing, without taking off the lights; and knots and waves are objectionable, because they very frequently concentrate the rays of the sun on the plant's foliage and burn it. Among the most prominent of the other houses which are taking up the subject of cheap glass, are Cogan of Leicester-square, and Claudet and Houghton of High Holborn, both of whom keep all the glass and glasses used in gardening; and it need hardly be said, that persons who devote themselves to particular objects can always supply better and cheaper than others who merely supply things in common with all other articles in the trade. One great improvement has arisen out of the reduced price and increased size of glass. Those who have the fronts of their houses, that is, the space between the lowest part of the rafters and the top of the brick-work, glazed with small panes of glass (generally from five to seven inches, by three to six, or even much less) and lapped, are enabled to put one slip of glass the full length, that is, if it do not exceed three feet in height; and the improvement which this makes in the appearance must be seen to be appreciated. The getting rid of the cross marks made by the lapping, enables us to see the plants through, as clearly as if there were no glass; and the neatness of the appearance, to say nothing of its superiority in use, is enough to tempt any body who can afford it to cut out the present patchwork, and substitute slips the entire length of the upright glass. In most houses, this varies from eighteen to thirty six inches: the expense may be easily reckoned. In a front thirty feet long, and two feet high, there will be under sixty feet of glass; and if three feet high, would require under ninety feet,—ninety eightpences. The glass, therefore, would be two pounds in one case and three pounds in the other; and if all the present glass were battered to pieces to make way for it, it would be well worth the sacrifice; but many will prefer to take out their front sashes, and make new; the whole might be computed, glazing and all complete, at little over one shilling per foot, and the old sashes would sell for something. We feel assured, that every gentleman who has a greenhouse in any conspicuous part of his grounds, with the upright portion in front glazed with little bits or squares, will be highly gratified with

the change it would make in the appearance of his house, to remove the upright sashes altogether, and have new ones made, so as to take panes of glass the whole height, and the width that would best suit the size of the large plates, that is, that would cut least to waste. The width of six inches, or from that to nine, would be found ample for all the purposes of strength and effect, for it would be unwise to have any more width than is necessary, inasmuch as a break would in that case be of more importance than a dozen with six-inch squares; but a three-foot length, with anything from six to nine inches wide, would be much stronger than even the six-inch squares are of the thin glass; hand-glasses should now be made with metal frames, and have only eight pieces of glass in them, four for the roof and four for the sides, and with care these will last much longer than any that are formed of smaller squares; let the sides be eighteen inches by eight, and the top rise at an angle of forty-five, and this glazed with the thick glass would be strong and lasting, for the breakage of hand-glasses is not by great violence, but by trifling blows, that would have no effect on such glass as may be had at the houses we have mentioned; but we should use the glasses that are blown in one piece wherever we could do so, and especially for all purposes of propagation.



ACHIMENES PICTA.

(Bentham.)

THE PAINTED ACHIMENES.

ONE hardly knows whether most to admire the leaves or the flowers of this plant: at any

rate, if it is chiefly ornamental when in bloom, it is no mean ornament when devoid of blossoms, for its leaves are most beautifully painted with zebra-like markings.

Like the other species of *Achimenes*, this is furnished with scaly tubers, which afford one means of propagating the plant to an almost unlimited extent; for, under suitable management, every one of the minute scales of which these tubers are composed, is capable of producing a plant. Above ground the plant assumes a succulent, herbaceous character; the stems growing erect, to a varying height, from one to two feet, according to the management to which the plants are subjected. The leaves and stems, and, indeed, every part of the plant is thickly clothed with rather longish hairs. Opposite each other, at intervals, along the stem, the rich, deep, velvety black-green leaves are produced: they are of a cordate-ovate figure, and are mottled and reticulated with pale whitish blue, in distinct, broad bands, branching outwards from the centre, and giving them the richest imaginable appearance. From the axils of these leaves, towards the upper part of the stem, the flowers are produced; their form will be understood from the annexed engraving; their colour is very brilliant—the upper half of the tube and the two upper segments being orange scarlet, and the other part of the flower deep yellow, mottled with broken lines of scarlet. It flowers towards the end of the summer, but its flowering period may be very much lengthened by the plan of raising young plants at successional intervals.

The plant is a native of New Grenada, where, in the wooded heights on the east of Guaduas, Mr. Hartweg, the Horticultural Society's Collector, found it growing in a forest of Wax Palms, (*Ceroxylon andicola*;) in its native habitat, it prefers dry rocky ground in places not much shaded, where it scarcely grows more than five inches in height, seldom producing more than two flowers on a stem.

There is a very remarkable difference between the plant in this wild form, and when seen under the influence of cultivation. Neither is this *Achimenes* the only plant upon which horticultural skill has produced a marked improvement. Instead of growing merely five inches high, and bearing two flowers on a stem, it usually grows, at least, a foot in height, and every stem bears six or eight flowers; but some plants of extraordinary luxuriance have been produced far excelling even this state. Plants have been grown to a height of three feet, quite healthy and thick of leaves, and bearing four or five flowers, or even more, together in the axil of one leaf; and "last spring," says Mr. Paxton, "we measured a stem, from which several vigorous branches had issued at a short distance from the root,

which extended upwards of four feet and a half from the surface of the soil to the top of the plant, and with upwards of forty expanded flowers upon it." So far do our cultivated specimens surpass those in a natural state.

The treatment of the plant is very simple; after flowering, the stems die away, and the tubers then require to be kept dry and cool. At the proper time (usually in spring), the tubers are to be potted in shallow pots, in a light rich compost of loam, leaf-mould, and peat earth; and they are best started into growth by the aid of a little bottom heat: about five roots may be placed at regular distances apart, in a pot six inches in diameter; or they may be planted thickly together in a shallow pan, and finally transplanted and arranged when they have grown an inch or two above the soil. There is no necessity for incurring the trouble of repotting them during their after growth, as they may be placed at once in their blooming pots, these being properly and thoroughly drained. They grow best in a warm pit, where there is a moist atmosphere and a temperature of 65 or 70 degrees, and where they may be partially shaded during bright sunshine. In summer they may be removed to a warm green-house, where they continue longer in bloom. Some of the roots should be excited early, and others should follow them for as long a period as the succession can be maintained. The plants will require from two to three months (more or less) to grow them into a flowering state.

But, besides, by means of the separation of the tubers, the plants may be abundantly propagated by planting the leaves, which produce roots readily under the ordinary treatment given to cuttings, and soon make good plants. Plantations of the leaves from the growing specimens, may serve to keep up the succession of blooming plants through the latter part of the year.

HARDY BIENNIALS AND PERENNIALS.

THERE are certain kinds of perennial herbaceous plants which it is convenient to raise in considerable quantities from seed, and an early opportunity may be taken for getting the principal bulk of the seed sown. Biennials, too, which flower but once, in the second year of their growth, should be sown at the same time. We have, in the accompanying list, included only some of those perennials of which seeds are most easily procurable, but of course any plants of this nature of which seeds can be got may be similarly treated. The main sowing is best made when it is delayed just so long as that the plants get strong, but not over luxuriant, before winter; for if in the latter state, they will suffer a good deal from severe wea-

ther. To avoid this, they should be sown on rather poor ground, and should be transplanted once when an inch or two high, placing them still on poor ground, a few inches apart. Plants thus hardened by exposure on poor soil, though small, will bear the winter better, and flower with more vigour, than larger succulent free-growing plants. The following may be sown any time during the months of May or June:—

Agrostemma coronaria, (Rose Campion.)—Biennial; height one foot and a half; flowers rose colour; July and August.

Althæa rosea, (Hollyhock.)—Height (average) five feet; flowers various; July to September.

Alyssum maritimum, (Sweet Alyssum.)—Height one foot; flowers white; June to September.

Ammobium alatum, (winged Ammobium.)—Height two feet; flowers white; July and August.

Anchusa asperima, (roughest Bugloss.)—Biennial; height two feet; flowers blue; May and June.

Anemone coronaria, (garland Windflower.)—Height nine inches; flowers various; May and June.

Anemone stellata, (starry Windflower.)—Height nine inches; flowers various; May and June.

Antirrhinum majus, (great Snapdragon.)—Height two feet; flowers various; all the summer.

Aquilegia vulgaris, (common Columbine.)—Height two feet; flowers purple; June to August. There are varieties with flowers of various colours, both single and double.

Aquilegia glandulosa, (glandular Columbine.)—Height two feet; flowers white and blue; June to August.

Aquilegia canadensis, (Canadian columbine.)—Height one foot and a half; flowers red and orange; May and June.

Calliopsis Atkinsonia, (Atkinson's Calliopsis.)—Height two to three feet; flowers yellow, with dark centre; August and September.

Campanula grandis, (grand Bell flower.)—Height one foot and a half; flowers blue; June to August.

Campanula media, (Canterbury bell.)—Biennial; height two to three feet; flowers blue; June to September. There is a white variety, and some have double flowers.

Campanula pyramidalis, (Chimney Campanula.)—Height three feet; flowers blue (or white); July and August.

Centaurea splendens, (splendid Knapweed.)—Biennial; height three feet; flowers purple; July to August.

Centranthus ruber, (red Valerian.)—Height two feet; flowers red (or white); May and June.

Cheiranthus Cheiri, (common Wallflower.)—Height two feet; flowers various; May to July.

Commelyna cælestis, (sky-blue Commelyna.)—Height one foot and a half; flowers clear blue; July to September.

Cynoglossum sylvaticum, (Wood Hound's Tongue.)—Biennial; height three feet; flowers blue; June and July.

Delphinium chinense, (Chinese Larkspur.)—Height two feet; flower blue (or white); July to September.

Dianthus armeria, (Deptford Pink.)—Height one foot; flowers red (or white); June and July.

Dianthus barbatus, (Sweet William.)—Height one foot; flowers of various colours—the most splendid is a deep crimson; June to August.

Dianthus caryophyllus, (Carnation, &c.)—Height two feet; flowers various; July and August.

Dianthus chinensis, (Indian Pink.)—Biennial; height one foot; flowers various—there are many beautiful varieties, some double; June to August.

Dianthus hispanicus, (Spanish Pink.)—Biennial; height one foot; flowers deep red; July and August.

Dianthus pulchellus, (pretty Pink.)—Biennial; height one foot; flowers lilac; June to August.

Dictamnus Fraxinella, (Fraxinella.)—Height two to three feet; flowers red (or white); July and August.

Digitalis aurea, (golden Foxglove.)—Height two feet; flowers orange; July to September.

Digitalis purpurea, (common Foxglove.)—Height two feet; flowers purple (or white); July to September.

Digitalis ferruginea, (rusty Foxglove.)—Biennial; two feet; flowers brownish; July and August.

Dodecatheon Meadia, (American Cowslip.)—Height one foot; flowers lilac; April and May.

Echium violaceum, (violet Viper's Bugloss.)—Biennial; height three feet; flowers blue; May and June.

Erigeron acris, (acid Erigeron.)—Biennial; height one foot; flowers blue; July and August.

Eutoca Franklini, (Franklin's Eutoca.)—Biennial; height one foot; flowers pink; May to July.

Eutoca multiflora, (many-flowered Eutoca.)—Biennial; height one foot; flowers pink; May to July.

Gaillardia bicolor, (two-coloured Gaillardia.)—Height two feet; flowers yellow and brown; July to September.

Gaura biennis, (biennial Gaura.)—Biennial; height three to four feet; flowers red; August.

Geum sanguineum, (blood-red Avens.)—Height two feet; flowers deep red; July to September.

Hedysarum coronarium, (French Honey-suckle.)—Height two feet; flowers crimson; June to August.

Linum monogynum, (one-styled Flax.)—Height three feet; flowers white; July and August.

Linum grandiflorum, (large-flowered Flax.)—Height two feet; flowers blue; June and July.

Lunaria biennis, (Honesty.)—Biennial; Height three feet; flowers light purple; May and June.

Lupinus, (Lupines.)—There are various perennial kinds; sow any that can be procured; they flower in July and August. *L. polyphyllus* (blue); *L. p. albus* (white); *L. grandifolius* (purple) are some of the best.

Lychnis chalcedonica (scarlet Lychnis.)—Height two feet; flowers scarlet (or white); July and August.

Mathiola incana, (Queen or Twickenham Stock.)—Biennial; height two feet; flowers various; June and July.

Mathiola simplicianlis, (Giant or Brompton Stock.)—Biennial; height three feet; flowers various; June to August.

Papaver nudicaule, (naked-stemmed Poppy.)—Biennial; height one foot; flowers yellow; June to August.

Oenothera biennis, (biennial Tree Primrose.)—Biennial; height three feet; flowers yellow; June to September. There are various other biennial species of Evening Primrose, with yellow flowers; *O. grandiflora* (large flowered); *O. suaveolens* (sweet scented) are pretty.

Papaver bracteatum, (bracteated Poppy.)—Height two to three feet; flowers scarlet and black; June and July. *P. orientale* (oriental Poppy) is very similar.

Pentstemon campanulatum, (bell-flowered Pentstemon.)—Height two feet; flowers purple; July to September.

Pentstemon atrorubens, (dark-red Pentstemon.)—Height two feet; flowers dark red; July to September.

Pentstemon ovatum, (ovate-leaved Pentstemon.)—Height two feet; flowers blue; July and August.

Polemonium caeruleum (common Greek Valerian.)—Height two to three feet; flowers blue. June and July.

Primula vulgaris variety, (Polyanthus.)—Height six inches; flowers various; April and May. The "red Cowslip" is another pretty hardy variety.

Ranunculus asiaticus, (Asiatic Ranunculus.)—Height nine inches; flowers various; July.

Silene regia, (splendid Catchfly.)—Height one foot and a half; flowers scarlet; June and July.

Silybum Marianum, (Milk Thistle.)—Biennial; height three feet; flowers purple; July and August.

Stenactis speciosa, (showy Stenactis.)—Height two feet; flowers purple; July and August.

Viola tricolor, (Pansy.)—Height six inches; flowers various; all the spring and summer.



ERICA HIEMALIS.

The Winter-flowering Heath.

THIS very pretty species of Heath, which, as its name signifies, is a winter-flowering plant, is one of the prettiest that bloom at that season of the year; and it has the additional recommendation of being a very free growing species, and a very free bloomer. The habit of the plant is to make strong upright shoots during the latter part of the summer, which become covered throughout their whole length, in winter, with small bunches of flowers, about three or four growing together at the end of little branches of an inch or two long, produced by the strong shoots. The flowers are tubular, about half an inch long, white at the extremity, and purplish at the base. Before the plants commence growing, in the spring, the strong shoots which have bloomed during the previous season should be cut in somewhat closely, in order to keep the plants dwarf and bushy; the plants may then be repotted, and will produce strong shoots for

blooming another season; the earliest and strongest of these shoots may be stopped to cause them to throw out additional branches. We may remark, that pruning and repotting a plant should never be done simultaneously, as it tends to weaken the plants. The following is the course of treatment which produced one of the best plants of the species which we have ever seen:—when first taken in hand the plant was six inches high, growing in a five-inch pot. In February, 1844, it was repotted into an eleven-inch pot: the soil used was a mixture of Shirley and Wimbledon peat earth, mixed with Reigate sand, large pieces of charcoal, and small pebbles: the soil was used in a very rough state. The plant was placed in a warm and moist greenhouse, until it commenced to grow freely; it was then removed to a low pit, where it was kept all the summer and allowed free ventilation, and occasional shading in bright sunshine. When the days were dull, or the evenings dewy, the lights were removed entirely. During September and October the plants were fully exposed to the sun: that season it did not produce many flowers, and these were removed before they opened. The following February it was removed to an eighteen-inch pot, and was kept growing in the greenhouse: during its growth it was occasionally watered with a weak solution of soot and Potter's guano, used perfectly clear. Towards the end of the summer the plant was freely exposed out doors, and during the ensuing winter was literally loaded with flowers.

This species of Heath is one of the best suited for the mode of training into pyramidiform specimens, which has been recommended as furnishing suitable objects for decorating straight broad walks in conservatories, or for placing on formal terraces, or, indeed, in any other situation where their formality would be in unison with the objects surrounding them. Pyramids of from four to ten feet high, and not more than two or three feet in diameter at the base, may be grown in a very few years, by following the simple plan of always retaining *one* strong upright leading shoot, and keeping all the laterals shortened in when quite young, so as to furnish the side branches. Such plants are certainly inappropriate except in situations which are highly artificial; but there is an air of novelty and uncommonness about them that seems to recommend them to notice. There can be no obstacle in the way of growing plants with a straight, upright, clean stem, and a round compact head, like that of an orange-tree, with which it would well associate, but we have never heard of this having been tried. In the form of young plants, from six inches to a foot high, furnished with several branches, and

nicely bloomed, this variety of heath is a favourite in the flower-market.

SEA KALE.

THE ground requires to be rich and well dug twelve inches deep; a line may then be drawn and a slight drill made, in this drill seeds may be dropped, two or three in a place, a foot apart; a succession of drills may thus be drawn in like manner, and the seeds dropped in: these being all covered in with the soil drawn out of the drill, the next step is, when they are up and have begun to grow, take out the weak and leave single plants, which will be then a foot apart in the rows, and three feet from row to row. The first season you have only to keep them free from weeds, and if the weather be very parching while they are young, they should have a good watering. When they have died down, the weeding should be continued, for weeds not only injure the crop, but also look unsightly. The plants come up stronger the second season, and will only require the earth to be stirred between them, and the weeds constantly kept under. Before they have died down so as to hide the rows, short stakes should be driven into the ground at each end of every row to shew where they are; and some time in the autumn there must be alleys dug between the rows, eighteen inches wide, and the soil taken out must be put on the top of the plants, so as to leave nine inches of earth above the crown. The tops of the rows are not to be rounded, but flat; all through the winter little need be done, but as the plants rise up in the spring they will disturb the soil at the top, and when that cracks is the time to cut the Kale; this must be done by removing the soil round the plant and cutting them close above the crowns, for if cut too low the plants will be injured for the next season, and perhaps may not recover at all, so as to be fine again. The earth may be drawn away with a trowel into the alleys, level with the tops of the plants, which are then to be allowed to grow again without earthing up. Once cutting is enough. As the Kale will not all come through at one time, they require watching every day as the season of coming through arrives, and if the first few are ready the others soon follow, so that the whole piece must be examined every day, and those which are breaking the ground must be cut; at any rate they must not be allowed to come through the ground, for they become strong and ill tasted. When the whole are cut the ground must be levelled, and they will sprout out strong again, and are to grow all the season. Pick off the flowers always if the seeds are not wanted, for the flowering and seeding weakens the plants more

than any casual observer would suppose. At the proper season they are earthed up again in the same way. Suppose we should want a little of the Kale before the ordinary time, it will be hastened by putting a few barrowfuls of dung, hot from the heap, in the alleys and on the top of a portion of the piece; this may be done at any time, but the ordinary method of covering with pots, and surrounding the pots with dung, is the best way if it be wanted very early, because the heat is longer going through the body of earth when the Kale is properly earthed up; yet there are those, and we are among them, who fancy that the Kale never eats so sweet nor so good when grown in vacuum—that is, under a pot, as when it has to find its way through the soil; nor is it so good a colour, or so large and fine. Sea Kale is forced in many ways, but when it is to be forced under cover there is to be no earthing up; it is left on the level ground, and the crown of the plant must be placed so as to let it be under the centre of the pot. In this case, only so many pots are used as are wanted for the first cut, and they must be covered up in those seasons according to the periods at which they are required for use. Many persons sow the seed on a patch or bed, and plant them out, but though it may save the ground some time, and be well enough when there is no ground to spare at sowing time, it never comes so fine and strong as when it is sown where it is to permanently grow. A good piece of Sea Kale will last for years, and only requires the surface to be dunged as soon as the Kale is cut; or the dung mixed with the soil it is growing in, by forking it carefully in, so as to get it down to the roots.

DOUBLE WALL FLOWERS.

Nobody can tell us the reason why Double Wall Flowers, which are so similar to double stocks in form, are so very rarely raised from seed. Acres have been sown and planted without one double one appearing among them. There seems no disposition to come so; yet many think they have taken every means to imitate the growth of stocks by seasonable checks, by keeping the seed till it is as old as it will grow at all, but without producing any good effects; yet the double flower of a wall and that of a stock are very similar. The Germans, however, have produced some Double Wall Flowers, which are very showy, but they possess the organs of generation, which the ordinary Double Wall Flowers do not, and they appear to be of a very distinct tribe. The singular part of this affair is, that in these flowers, the German kind, even when double, lose the organs of generation; the seed vessel remains, however full and

double the flower, whereas on our Wall Flower, and all the varieties of it, there is a total absence of these—the flower is a confused mass of petals, many of them mis-shaped, and some not half developed; precisely the same is the double stock, and we see no intermediate stage of growth. There is nothing between the single cruciform bloom, with its pistil and anther, and the mass of petals, which have neither the one nor the other. This it is that has puzzled many admirers of the flower. With regard to the German kind of Wall Flower, they would appear to be the intermediate stage between single and double, and yet the more they are examined the more distinct they appear. We recommend those who have a good sort of single Wall Flower, to sow in a cold frame, about the end of May, and when they are large enough to plant out, to keep them so dry as to stint their growth, but to take care they do not actually suffer. It is for the convenience of keeping off the rain that we recommend a frame, for nothing can be more hardy than a Wall Flower. By keeping them very dry, and giving them all the sun, but taking care they do not actually flag, they *may* be thrown into that (so-called) diseased state, as to bring double flowers. It is, at any rate, worth the trial.



CRATEGUS TRILOBATA.

The three-lobed leaved Thorn.

In the *Annals of Horticulture*, (p 535.) we have already noticed this plant, and recommended the family to the attention of those who admire ornamental trees of small size. The annexed representation will serve to show that this particular kind of Thorn is not less deserving of attention than its allies, for it has

the good quality of producing a great profusion of its flowers, which are of large size, and come in large bunches. The habit of the tree is spreading, and, in general character of growth, resembles *Cratægus flava*, but the branches are much less vigorous and more thorny. The flowers are white, and are produced freely at the beginning of summer; they are succeeded by yellow fruit, slightly tinged with red. The leaves die off in the autumn, of an intensely deep red, which renders the tree very conspicuous. The present plant is figured in Loddiges' *Botanical Cabinet*, under the name of *Cratægus spinosissima*; and is there stated to be a native of the south of Europe, but more recent accounts regard it as an hybrid, raised in the Hammersmith Nursery about (or before) 1820.

We may take the opportunity which now offers of again drawing attention to the merits of this genus of hardy trees. Whether space is limited or unlimited, Thorns are in character, either in company with other trees or grouped by themselves. The capabilities of the genus, as regards its usefulness in ornamental planting, must be obvious, when it is recollected that every form which trees in their varied growth assume, here finds its representative—the fastigate, the pyramidal, the compact or somewhat globular, the diffuse, the horizontal, and the drooping, are all represented by different members of the family of *Cratægus*.

THE CHEMICAL GARDEN INK.

It is not too much to say, that a good kind of garden label is a desideratum. There are very numerous kinds in use, all perhaps adapted more or less perfectly for particular purposes, but none which are so obviously and generally appropriate and useful, as to admit of being unconditionally recommended. For large (especially permanent) labels, wood is not durable enough; iron is too expensive, and soon corrodes; zinc also does not "stand" well; and earthenware (of which class Bourne's label is a very neat thing) is too brittle, and is also expensive. Slate seems the best material for this use. But a much more numerous class, is that of the small labels which are required for plants in pots, for using when seeds are sown, and when cuttings are planted, and for other minor purposes. For the commercial and the practical gardener, wood answers best for these uses; but the trouble of cutting them, and the inconvenience of having to rub them with wet paint, when written on (which is necessary to render the writing durable) show them to be unsuited for amateur and lady horticulturists. Zinc appears to be the

best material for their use, inasmuch as they can be purchased ready cut to any size, and require only to be written on with proper ink, and a *quill* pen. A good ink for this purpose has, however, not been provided for sale until recently; or at least, what has been prepared for sale had this objection, that it took some time before the writing became legible, and even then it was not very clear and distinct. This deficiency has been now supplied. Messrs. Burrows and Thom have prepared what they call a "Chemical Garden Ink" for the purpose of writing on zinc, or other metallic surfaces, and which has the recommendation of becoming fixed of a clear black colour, almost instantaneously. We have had an opportunity of using this ink, and speak from experience, as to its becoming very distinct and legible as soon as written. We have not had time enough to test the statement which is made, that it is "*unaffected by weather*," but we have seen that the simple act of rubbing the recent writing (that is, after it has fairly dried) with a wet finger, improves its clearness, and that it does not rub off in this way. The ink is a clear yellow fluid, and as it flows from the pen seems almost colourless upon the surface of the metal, which, however, soon changes black by the chemical action of the ink on its clear surface. The only preparation required by the labels, is to rub them with fine sand-paper, until they acquire a clean shining surface; this preparation is, however, essential, as from the greasy nature of the surface of ordinary zinc, the fluid will not flow on it unless this greasiness is removed. It also appears to be essential to perform the writing with a *quill* pen, as the use of a metal pen would interfere with the action of the ink on the surface of the zinc. It is stated of it, that it is "uninjured by heat, frost, or wet; it is, in fact, improved by washing with water when dry. It is nearly colourless, and not corrosive, and therefore recommends itself particularly for the use of ladies." When the labels have been used, and are required again for other plants, it is only necessary to rub them again with fine sand paper, which removes the previous writing entirely, and leaves the label ready prepared for being used again in a similar way. From our own observation of this ink, so far as it has gone, we think it is superior to any other that has been prepared; and from its cleanliness, and harmlessness too, we think it is particularly suited for the use of ladies and other amateur cultivators.

THE JEFFERSON PLUM.

THIS is a new variety of great excellence—so much so, that it is a question whether or

not it may not prove to be superior to the justly prized Green Gage: this is its character in America, where it was raised; it is there said to be the most desirable and beautiful of all dessert plums, and although this has not been fully tested in this country, yet in the unfavourable season of 1845 it was found decidedly superior to that excellent variety. This plum was raised by the late Judge Buel, and the original tree is, it appears, still growing in his garden near Albany. It appears to have been introduced to this country by Mr. James Barnet, who obtained it from Mr. Wilson, a nurseryman at New York. The summer of 1845, which was a very unfavourable one for the maturation of fruits, was the first in which the fruit of the plum had been produced in this country, and notwithstanding the unfavourableness of the season, it attracted attention from the merit it was found to possess. The following description of the variety is taken from the *Journal of the Horticultural Society*, where a figure of the fruit, as grown on a standard, is given:—"Fruit large, roundish oval; stalk about an inch in length. Skin dark yellow, remarkably speckled with purple and brownish red. Flesh, deep orange, slightly adhering to the stone, juicy, exceedingly rich and sugary. Stone middle sized, elliptic. Ripe in the third week of September; but in ordinary seasons it will probably attain perfection about a fortnight earlier. The tree appears to be a great bearer, as a standard. Shoots smooth, or but partially and very slightly downy, of an upright growth. Leaves middle sized, elliptical, glabrous above, serrated, or acutely crenated. In rich soil, or against a wall, where it deserves to be placed, this variety would, doubtless, attain a large size. It will afford a later supply than the Green Gage, for it has the property of hanging for a considerable time on the tree after being ripe." There is one particular aspect in which the cultivation of this variety is likely to be of some importance. There are many situations unfavourable to the growth of plums, where fruit of good quality and properly flavoured are seldom obtained; and there are seasons in which, even under more favourable circumstances, plums fail to acquire their wonted excellence. In either of these cases—either when the season is unpropitious, or where the situation itself is not over favourable—such varieties as the Jefferson Plum would be likely to produce fruit of good quality and flavour.

POTATOES AND THE POTATO DISEASE.

THERE appears to have been a good deal of controversy about this subject; and the con-

clusion to which some of the most learned philosophers have arrived, is, that the visitation was completely atmospheric; that it affected none of the Potatoes that were taken up early; that it is by no means new; that the cause was the cold and cloudy weather in July; that it attacked the foliage and descended; that the present season has no appearance that justifies a fear of the disease affecting the crops now coming forward; and that unquestionable proofs have been manifest, that sound Potatoes may be procured from sets cut from diseased Potatoes. Mr. Chapman has, however, discovered that, when the haulm is affected, the disease runs a considerable distance, but that, if the haulm be cut down, the disease goes no further. The only preventive we should take in planting Potatoes, would be to cut away every mark of the disease, for, when the set of a Potato will boil and eat well, and show no ill-effect, it is impossible that it will be at all detrimental to the growth. In short, the experience of the past shows, that the disease is totally independent of the set; and that diseased sets will give sound Potatoes; and sound sets will, under similar circumstances to those under which they here suffered, give diseased ones. The notion that the fungi which have been detected is the cause of the disease, has been abandoned by most of the writers on this subject, and they are all but proved in most persons' estimation, to be the effect; among practical men, it has been, all along, treated as a chimera. The new Potatoes of the present season, grown from sets of 1844, the same description in every respect, the same growth, the same season, taken up at the same time, and merely left unplanted last year, have been as free from disease as if such a thing had never existed; and it is impossible to entertain, for a moment, an idea that there was any disease in the sets, or that it can have anything to do with the degeneration of the Potato.

With regard to the kinds to plant, we can scarcely do wrong if they are in good order, that is to say, if they have not spent themselves by growing while stored. We should, however, choose those that would be called small for table, and plant whole sets, giving plenty of room, according to their sorts; but, if you get large ones, and must cut the sets, sprinkle them with slaked lime, so as to dust all the cut parts, and let them dry before you plant. As soon as these are above ground, dust the foliage with lime, and choose the morning for the operation, while the dew is upon them; as Mr. Chapman, in a paper written for the *Gardeners' Gazette* observes, it will be worth all the cost, if it be only for destroying the slugs. So long as there is any influence in the lime, it will prevent any attack of the

disease ; and if, in after time, there should be a continuance of such sunless weather as rarely fails to bring mildew, and the haulm should be touched with it, however slightly, sprinkle all the foliage again with lime, and it will instantly stop the progress of the disease, and the tubers will not suffer. Indeed, we should venture any quantity, if we depended solely on the produce of the land for our existence, such is our faith in the opinions of practical men, and our conviction from our experience of last year, while almost everybody suffered, more or less ; and such abundant opportunities occurred of trying experiments—opportunities which we took advantage of in every particular, and in no case was there an instance in which lime failed to stop it, when applied to the foliage ; or that cutting down the haulm in time failed to prevent its reaching the tubers. To hesitate about planting, appears to us to be little short of insanity ; and to treat the disease in the Potato as anything but the mildew, which affects everything else, is to veil in mystery that which is as well understood, among practical men, as any one of the evils they are subject to in the course of their profession.

The Tulip grower is subject to the same mischievous disease. It attacks the foliage, and if not checked by removing the affected part, descends to the bulb and destroys it. Very dry weather will sometimes stop the disease, even when it has begun, by drying it up ; and, without care, the bulb is not affected ; but cases of this kind are rare ; we more frequently had nearly all the bulbs injured ; and, although we may plant again all that promise well, even some of the best are so damaged, as to dwindle and rot away. The same thing occurs in the Turnip, and, unless they are taken up at once, sprinkled with lime and the tops cut off, the roots will rot in the ground. These, like the Potato, suffered in many places. Melons, also, that were healthy up to the period when the other things began to suffer, became affected so much, that scarcely a fruit was obtained where the mildew once begun. In one man's hands we saw all the plants in pretty nearly two hundred lights suffering so greatly as to be all thrown away ; and the same disease, however varied the form of its attack, visits almost every species of vegetation. All this should convince us that there is nothing to connect last year's misfortunes with the future ; no reason to suppose that the mildew will affect next year's crop any the more, because it was fatal to the last, any more than we have to dread a parching, dry summer, or a severe winter, because the preceding one was so. There is no doubt that, if we have a long, rainy, cloudy season, like the last, the Potatoes, Turnips, and vege-

tation generally, will be attacked the same way ; and we must use all necessary precautions to defeat it, but we have no right to expect such a season. The very fact of its being so last year, renders it less likely ; but we would engage to grow a clean crop of Potatoes, even if we had the same over again.

CUT FLOWERS.

THE growing fancy for cut flowers as ornaments for drawing-rooms, is doing wonders for the floricultural community ; and the rage for nosegays and bouquets adds greater charms to private and public assemblies, than all the jewellery that can be displayed. There is no ornament to equal a well-chosen bouquet or a floral gem ; and rather would we see, as we see now, tastefully arranged flowers, as the only adjunct to female beauty, than the most liberal use of precious stones and gold and silver ornaments. The lady who now attends a ball or fashionable party without her bouquet of natural flowers on her dress, or in her hand, seems only half prepared for the occasion ; and how enviously does she glance at the more favoured beauty who has been supplied ! The fragrance of the passing Roses and Violets, and Jasmine and Orange-flowers, seems to reproach her ; and she is to be pitied. Ladies, look to this. If your devoted swains or affectionate brothers, or your attentive husbands, have not procured them for you, buy them yourself, rather than let the fashionable world see you are neglected. Let them be the best you can procure, for nobody will know but that they represent the interest which some ardent admirer takes in your welfare and happiness. Gentlemen, if you have the least regard for any living fair one, never allow her to be seen at a party without a few of the best flowers you can procure, nor at home without a nosegay. She will think of you so long as their beauty lasts, and every time she is charmed by their fragrance, she will be reminded of the giver. Is not this enough to make you look about you ? Flowers are an offering which no lady can refuse. They are acceptable at all times. Expend a shilling or a pound on a trinket, and a prudent female may refuse it. Give a guinea for a bouquet, and the most icy damsel in the world cannot decline the present. All other gifts may be received kindly or coldly, but flowers never ! To be serious, for we have wandered a little in this matter, there is not, even to the most insensible creature on the face of the earth, any present so agreeable as a bunch of good flowers, and the more choice they are, the more acceptable are they to a person of accurate sense and discernment. It is this fact which accounts for the rapidly increasing

taste for plants, and that will eventually lead to every house being furnished with them either in pots, which will give them a longer existence, or in nosegays, which may be renewed at no great cost as often as necessary. If we do not close here, people will begin to suspect we are fond of flowers and plants, so we have done for this time.—*Glenny*.

TRAINING OF ROSES AND GERANIUMS.

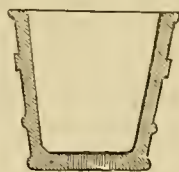
It is quite time something was done towards abolishing the present ugly and unnatural system of training plants; for, independently of the Geranium, which has long disgraced gardening, we have the Rose condemned in the same way, to the system of interminable props; even standard Roses were shown last year with sticks reaching from the pot to the branches; and there never was a more ugly and uncouth addition than these props made. They stuck about, all round the plant, like the wires of an umbrella; and the symmetry and beauty of the Rose-bush or Rose-tree were totally eclipsed by this untidy and ungardener-like style. In Geraniums, it has led to the encouragement of plants of naturally weak habits—plants which would not hold themselves up at all without support; and this is altogether bad; for one can hardly imagine anything worse than a stem of a plant that is lolling about the pot, instead of bearing itself properly as a graceful and healthy looking bush or shrub. We are averse to everything unnatural; and surely nothing can be so unnatural as to see a hundred or two artificial stems placed to hold up the real ones. To look along a few pots of Geraniums, as now exhibited, is like looking at a dead hedge or a forest of osiers; there is nothing to be seen but sticks half-way up the plants; and to be at all slightly, the plants are placed upon the slope to show the top of the plant, instead of exhibiting a shrub feathered to the edge of the pot. With Roses it is almost worse, for they are objects seen to perfection in the open ground, without any such monstrous additions; and when seen at exhibitions, distorted by so many wooden legs, they are the more offensive in consequence of our familiarity with better things, or rather with the same subjects better grown. Still the Societies encourage these barbarisms; and so long as they permit them to be exhibited for prizes disfigured in that unnatural way, we fear there is but little hope of an alteration. Geraniums, to be seen in the perfection of flower, must be shown with only one or two trusses; one, perhaps, better than two; for in no other way can the flowers be produced their full size; but at any rate they ought to be shown without the wooden props, which are now so crowded into their

pots as to be a positive detriment to the very best that are exhibited.

WEST KENT GARDEN POT.

THERE is scarcely an operation connected with the pot culture of plants, in which the amateur is so frequently at fault, as in that of re-potting his plants. He is at a loss to regulate the amount of drainage supplied by crocks placed at the bottom, or he does not know into what larger sized pot his plant requires to be placed. These are serious obstacles, even supposing him to know the proper kind of soil, how deep to set the plant in the new pot, and how firm to render the fresh soil which he puts about its roots. There are thus some difficulties to be overcome in potting the generality of plants; but if the plants are large, and have been growing in large pots, the difficulties become increased by their unwieldiness. Even to professed gardeners, the operation of potting a large plant is a matter of some difficulty, from the fact of its size, the bulk of soil about its roots, and greater force being required in handling and moving it than is quite suitable to such tender organs as the roots of plants. To remedy this inconvenience, the West Kent garden pot has been designed: it is the invention of Mr. G. Fry, of Blackheath, and reflects considerable credit on his ingenuity. By means of a contrivance, in the shape of a block, which accompanies this pot, very much of the inconvenience of removing even a very large plant from one pot to another, is obviated; and in the construction of the pot itself, some of the other difficulties pointed out are also obviated.

The pot itself consists of two parts:—The shell, which consists of what forms the side of the pot, and with a narrow ledge at bottom, and which is, in fact, a hollow inverted cone, provided with a narrow ledge projecting inwards, at its smallest end. This part differs from the ordinary garden pots, in having the hole at the bottom, nearly the whole diameter of the pot at that end. The drain-cup, which is the other part, fits—not too nicely—into the bottom of the shell, and rests upon the narrow ledge before mentioned. The form of this drain-cup is suggested by its name; it is, in fact, a shallow pan, provided with a small hole for the passage of water, which is so placed as to come directly over the larger hole. When in use, this pan is filled with the broken crocks, pieces of charcoal, or whatever other material is used for drainage, and thus in itself becomes a guide



to those who are not familiar with the operation, as to the amount of drainage which is to be given to a pot of any particular size. The drain-cup being a part of each individual pot, without which it would be incomplete, it should, of course, be made to accompany it; and the cup of a smaller or larger sized pot, cannot, with facility, be substituted for it: in fact, it should fit tolerably closely, though not so tight as to prevent or obstruct the passage of water; for if it does not thus fit, there will not be sufficient firmness to bear the mass of soil, and the cup would be very liable to be displaced, with much inconvenience, in moving the plants. In all other respects, the pot is intended to be used in a manner precisely similar to that in which the common pot is employed.

Where these pots are employed, the potting-bench is intended to be supplied with a block, for the purpose of facilitating the removal of the plants—the large ones especially—from the pots at the time of re-potting. These blocks are to be provided of various sizes, according to the size of the pots. That which is employed in each case, should correspond in size with the diameter of the drain-cup, and of the hole in the bottom of the pot. The blocks are formed of wood, and should be rather deeper than the sized pots they are used with, and are made smooth and cylindrical at this part; they rest upon a broader portion at the base, to give them firmness and stability; the whole may be turned out a single piece of strong wood, and may then be made a little ornamental, but this is, of course, not an essential part of the plan.



When a plant is to be re-potted, the pot containing it is set upon the top of this block, which is adjusted to the hole in the bottom of the pot. A continuous pressure—gentle, but more or less powerful, as the case may be—gradually disengages the ball of earth and roots from the pot, which drops to the base, while the ball of earth is left elevated at the top of the block; in this position it requires to be steadied by one person, while another examines the roots, and does what is necessary to be done. The plant is then to be removed with care, in the ordinary way, into the larger pot, which should have been previously got ready to receive it.

But this is not the only use to which this contrivance is applicable. When plants are growing in large pots, and their roots are necessarily embedded in a large mass of soil,

it is very often exceedingly difficult to keep this mass of earth thoroughly and equably moistened; portions of it, as, for instance, the surface, will be quite moist enough, while below it is as dry as dust. The principal inconvenience arising out of this, is, that it is very difficult to ascertain when such a state of things exists, and, consequently, the plants often suffer from actual want of water, when the surface, perhaps, is even moister than it should be. The use of this pot will afford the means of avoiding much of the danger attending this condition of the soil; for, by means of the block, the ball of earth may at any time be elevated out of the pot, and examined, without disarranging it, (which cannot be done in ordinary cases,) and then returned into exactly the same position in the pot, simply by lifting up the pot again, as it was originally fixed. When the plant is returned to its original position, a proper supply of water can be given to penetrate the whole mass.

The pots may be made either quite plain, or ornamented by bands around the outside, according to taste; this, of course, does not alter the principle or usefulness of these pots. The bands, however, very much strengthen the pots.

There can be little doubt that when these pots are manufactured, and brought into the market, they will become generally used by those who have plants of large size to manage. For the purpose of facilitating the operation of re-potting, and also of adjusting the supply of water to the wants of the plants, they will be of the greatest use to amateurs, and those who are not quite familiar with all the operations of plant culture. Whatever tends to do away with difficulties which stand in the way of success, deserves every encouragement that can be afforded to it.

THE NEW DAHLIAS.

It has been thought by many growers of this flower that some of the approved varieties are not sufficiently novel to bear the encomiums that have been passed upon them, nor to deserve the prizes awarded. It is thought that they are so like some of our present varieties in colour as to present no variety in a stand. To persons who only value things by their striking novelty in colour, they may not appear sufficiently interesting; but by the florist, who looks at form, they may be appreciated. Now the marked difference between the doubleness and closeness of the new varieties is so obvious, that it would be impossible to undervalue the new ones when placed by the side of their predecessors of the same colour. Our readers will remember the extraordinary advance which the Standard of

Perfection displayed, when compared with other dark crimson; and the new ones of the present season, or rather of the last season, to be sold out this spring, possess similar claims for their superiority over others of their colour. The new ones are all marked for some decided advance of quality upon others in their class, or for manifest novelty of some kind; and in all cases there is some claim or other which their predecessors do not possess. To mention the actual novelties that have been distinguished by prizes or certificates, would much lengthen our account. We begin with—Sir Edward Antrobus, the most double and symmetrical red in the whole tribe; Princess Radziwill, the most close and double of the edged or tipped varieties, and of a rich and deep colour, and though reflexing when full blown, it retains all the points of form; Marchioness of Cornwallis, a flower exhibited white, but we suspect by the operation of shading, for it indicates an occasional stain—this may be accidental, and even uncertain, but still many will be content to grow several for the chance of such blooms as have been already shown; Marquis of Aylesbury—rosy lilac or purple, brighter and better than any other of its class; Queen of Perpetuals, a very beautiful colour, as near as possible to a lilac; in this the colour gained the prize, even if it were no better in form than some less bright; Magician, selected for its colour, which is new, between a yellow and fawn, and striking; Lady Stopford, as much like Admiral Stopford in form as it is possible to conceive, and of a rosy crimson; Duke of Cambridge, a beautiful form, and a bright, thick, darkish crimson; Prometheus, selected for its extreme doubleness and symmetry, and its rich purple; Newington Rival, a flower so much like the Standard of Perfection, that many considered it the same or too much like it for a certificate; but, if it be larger or smaller, or blooms a different season, such a flower would be useful, as it might be shown when the other could not; all that were shown were certainly better in the centre than the average of the standard blooms; Bohemian Girl, approved for its novelty; it is a tipped or rather edged flower, with a good deal of colour, of a deep purple or mulberry, unlike anything we have; it was shown often without being well up in the centre; but it has been shown perfect, and then it was a most striking and rich variety. All these, therefore, have some claim to the distinction put upon them, and most of them will be grown by exhibitors, because the old varieties, that at all approach them in colour, will be found very inferior; and stands which have the advantage of some of these new sorts, well-bloomed, will throw others which have not got them far behind. The fault in some

of the old varieties is a want of more petals; some of the new ones have three or four more than the old ones, and favourite as the Springfield Rival very deservedly is, even that would be better were there a few rows added to it; and it is in this that the great improvement is wanted with many others, which only have their reign until something in the same way beats them; and when we speak disparagingly of Dahlias long since thrown away, it does not follow that they were not, in their day, by comparison, good. All the tribes of flowers, which are very difficult to improve, retain in their show-collections many that have been successful for years; while such flowers as do advance rapidly, so completely beat their predecessors that they get discarded altogether. Among Geraniums, Pansys, Cinerarias, Calceolarias, Dahlias, and the like, if we look to a ten-year-old catalogue we shall hardly find half-a-dozen that are now cultivated; whereas, if we take Auriculas, and Polyanthuses, and Carnations, many of the sorts now shown, are in catalogues of even twenty years old.

The Dahlia is especially an improving flower, and new ones certainly throw old ones out of collections.

THE SWEET WILLIAM.

THERE are few subjects more showy than this particular section of the *Dianthus* family, for its noble trusses of bloom entitle it to a place among the most favourite beauties of the border. It has the advantage of great variety of colours as selfs, and very curious and uniform markings when variegated. It also comes rich as a semi-double flower, and it is capable of being propagated to perpetuate any particular kind. Whether it be worth cultivating for exhibition or not is a question worth entertaining; because as very much has been done with flowers infinitely worse in character, and with less to recommend them, there can be no doubt that something very considerable might be achieved by careful selections, and discarding the worst. The chief fault of the flower is its fimbriated edges; but then pinks are as bad, if not worse, and picotees and carnations were not a jot better. Again, all three of these favourites were like a five winged wind-mill, so narrow were the petals, that no one who looks upon one of the single original flowers can imagine that they were the aboriginals of the magnificent flowers now in cultivation, as show carnations, picotees, and pinks. There is no reason, therefore, to doubt but that larger flowers, clearer markings, brighter colours, purer whites, and thicker petals may be obtained in the Sweet William; and the proper way

to accomplish this, is to select each year for seedling from those which possess some one or other of these properties in a marked degree, or at least show some approach to it. One flower may be larger, but no better, and another may be smoother on the edge, a third may be finely marked, a fourth a brighter colour, and so on, but in all other respects may be no better, perhaps something worse; but by seedling from these, and none but these, and again selecting from the produce the best for seed-bearing, and persevering carefully in this course, success in time must follow. Then, if double flowers are desired, the seed must be saved from double flowers; but as these may be already found, the first selections of double should be purchased, and for the purpose the very best should be chosen.

PRIZE FUCHSIAS.

THERE are enough Fuchsias now to entitle any one to show none but well contrasted flowers, that is to say, flowers of which the corolla is one colour, and the sepals another. There is hardly an excuse for growing or exhibiting a self. We have pale rose or flesh coloured flowers, with purple or deep crimson, or violet corollas; and whites, with all sorts of corollas; so that selfs, or flowers in which the sepals and corolla are alike, or even the same cast of colour, ought really not to be tolerated by florists, unless they are very novel indeed in some points, and that novelty is good. The great bulk of the flowers now in cultivation, present the too usual sameness of most things of which there are many. The same kind of flowers comes from seed in twenty different people's hands, and each thinking he has a novelty, although nothing to boast of, gives his pet a name. They are not exactly alike, it is true, but they are not sufficiently distinct to look well in the same collection; and unless the thing has been submitted to, and noticed by, some one in the habit of seeing all that are good for anything, nobody can tell what he is buying. For instance, he orders the best he can hear of, at the prices advertised, and, at blooming time, he finds several so much alike as to thoroughly disappoint his hopes and expectations. This season we have great promises and various challenges, and perhaps more real good ones than usual; but there are some too much alike to be of much use in the same collections. The raisers of many new ones are doing their best to show specimens; but in judging the new ones it must be borne in mind, that small plants will show the habit as well as large ones, and that the habit will decide the claims of a plant when the flowers are at all equal. Again, it should be remembered, that the true habit of a plant is best

shown by exhibiting it in its natural growth without pinching in the tops to make it bushy, or otherwise artificially assisting its appearance; and we should recommend every one to show two plants, one cultivated as well as it can be by pruning, the other grown as well as it can be without cutting at all.

POTTED PLANTS.

ALL plants in pots, when exposed to the sun and wind, require frequent watering, and simply because the pots dry fast, and then the fibres of the plants suffer directly. This would seem to demand that when pots are in the open air they should be plunged; but there is another mischief awaits them if this be done: worms get into the pots, and the roots get out of the pots, and striking into the earth, excite a growth which is not desirable while there, and receive an awful check when the pot is removed, and the roots that have struck through into the ground are broken off, because the plant has depended on them for all its extra growth. It has been found the best plan to place the pots on a hard bottom—paved, cemented, bricked, slated, tiled, or otherwise firm and waterproof; to place them as close together as they will stand, in breadths of six feet, and any length, with the ends south and north, and the sides, of course, east and west. If they are to remain on the same situation all the summer, it will be worth while to pack them, as it were, in ashes or gravel, or other naturally dry material, because the watering of the pots will moisten whatever they are packed in, while the hard bottom will prevent the wet from lodging. The roots will even here strike through the bottom of the pot; but, in the first place, there is less disposition, because the hard bottom, and the ashes or gravel will not be so inviting as the common earth; and they will greatly protect the sides of the pots from sun and wind, and thus keep up a moisture among the fibres that have reached them; but if the pots have no packing, an occasional examination and constant watering, when the sun goes down, will make all but the outside rows pretty safe, and a row of turves, or a foot wall, or a piece of plank along the sunny side, will always protect them enough.

THE POPPY.

THIS gaudy flower is only fitted for any large garden, and it requires no little attention to keep it from spreading all over a place, and degenerating to any common and ugly semi-double subject. The great fault of the Poppy is its flimsy nature, and the short-lived beauty of the bloom in consequence of it. The flower is hardly full blown before the petals begin to fall, and unless the seed-pods are constantly

taken off before the seed perfects itself, the whole ground will be covered in a season. There is another disadvantage in this flower—its exceeding short period of bloom; probably in a hot summer it does not last a fortnight, and even in that time the first pods will be ripe enough to scatter the seed; still the Poppy has struck out into numerous and richly coloured varieties, vying for the moment with, if not eclipsing, most of the other flowers of its season, and literally lighting up an otherwise very dull scene. On this account it has many admirers, and in very large domains it is usual to sprinkle a few seeds every dozen yards or so, round the outer borders of large shrubberies, not in small patches, but in a sort of broad cast sowing, say miss a dozen yards, and then scatter a pinch of seed so as to occupy three or four yards, but very thinly sown. This may be done as early as any of the border seeds; when they are well up, they may be thinned out with the hoe to such distance as will enable them to grow and bloom well, and then be allowed to take their chance. The instant they begin to flower, pull up or hoe out all the single and semi-double ones, and retain only the best; but if the seed be originally sowed for double flowers, they will come very generally double, and wherever there happens to be any better than ordinary, or new in colour, they may be marked for seed and the pods be left on; the others should have their decaying flowers cut off, and no pods be allowed to perfect themselves, for they would so sprinkle the ground, that they would plague you the next season like so many weeds, and require hoeing out, besides which, you would be obliged to depend on them as your stock for next year, for it would be useless to sow other.

ASPARAGUS.

THE Asparagus, (*Asparagus officinalis*,) is a native of the sandy sea-coast in several parts of Britain, seldom rising above a foot high, and bearing little apparent resemblance to the cultivated plant. In cultivation, it rises four or more feet high, according to the soil in which it is grown. There is, in reality, only one sort of Asparagus, the giant varieties being merely the result of good cultivation in very favourable soils. A rich sandy loam is the description of soil in which this plant thrives; and where such a soil is not naturally present, endeavours should be made to bring it as nearly to such a quality as possible, by deep trenching, and the addition of sand, clay, loam, or whatever may appear to be most needed. Ground intended for this plant should also be well manured when it is trenched, such trenching to be three or more feet deep, or as

deep as the soil will allow. The manure should be thoroughly mixed with the soil, and drains should be put in to secure the quarter from stagnant water if necessary. If a foot of prime spit dung be spread over the whole of the quarter, and well incorporated with the soil, it will not be found too much. In trenching, a fair trench should be opened at one end of the piece, and then the earth and dung should be chopped down, turned over, and thrown to the other side of the trench: in this manner the dung and earth are well mixed, and the ground is left light and open. If this be done during winter, a second turning over in February or March, just before sowing or planting, would be highly beneficial. In the latter month, proceed to lay out the ground into beds four feet wide, and with alleys between them three feet wide. Throw out only a little of the earth from the alleys on to the beds, and level the beds. If the ground is fit for the growth of Asparagus, three rows of plants in each bed will be quite sufficient; but if poor, four rows may be planted. In the first open weather in March, the seed should be sown in equidistant rows, extending the length of the bed, drawing drills about two inches deep, and scattering the seeds thinly in it; rake smooth, and tread the seeds in if the ground be light. The beds must be kept very clean from weeds; and regular attention to watering in dry weather will materially assist the progress of the plants. When they are about two inches high, thin them out to about nine inches or a foot apart in the rows, according to the capabilities of the soil. In the following spring, give a dressing of well-rotted dung, and carefully fork it in. It is a general practice to lay on the dung in the autumn as a protection against frost, by which it becomes very much exhausted before the spring; so if this course be pursued, some addition ought to be made previously to forking over the beds.

Sea-weed is an excellent manure for this vegetable; and considerable benefit to the crop has also accrued from giving the beds a good dressing with salt in the spring. The above method should be pursued in the second and third years, adding more earth to the beds from the alleys in each season, and manuring well also. In the third season, some begin to cut the heads for table; but this is not to be recommended, as it materially weakens the roots; and even in the fourth year but few should be cut, and those only the earliest.

Some prefer planting one year old plants, which have been raised in beds sown thicker than when intended to be left; but the sowing where they are to remain is decidedly the better practice, although by the former method a year is apparently gained in the plants

coming into a bearing state. The management is the same in both cases, except in making the drills deeper to receive the roots, burying the crowns about two inches below the surface. The after culture is nearly similar to that above, the principal points to attend to being to add a good coat of dung every season; the rough of which should be raked off into the alleys in the spring, and the surface forked over, great care being observed not to injure the crowns of the roots. The sides of the beds are also generally pared down, and an addition made to the surface of the bed from the alleys, so as to have six or eight inches of light earth over the roots, by which means the shoots are blanched, and also rendered long enough for use. In light soils this plan is very good; but in heavy soils, a covering of sand, leaves, or any similar material answers better, than to lay such a thickness of heavy earth on them. In the autumn, the stalks should be cut over and cleared away, and a layer of dung or other material spread on the beds for protection from frost. None of the shoots should be cut for use after peas become tolerably plentiful, as late cutting weakens the roots for another year. In cutting, care must be taken to avoid injury to the other shoots still below the surface; but those who like a fine flavoured vegetable, and are not too nice how they look when cooked, will do well to let the shoots grow at least six inches above the soil, so as to acquire their natural colour, and it will then be easy to break them over with the finger and thumb an inch or two below the surface, without danger to the advancing shoots.

Asparagus is very easily forced, and by that means may be obtained all through the winter. The plants for forcing must not be less than three years old; but when of greater age, are much more productive. Almost any structure, where a moderate heat is maintained, is suitable for this purpose; but one of the best is a pit or frame on a moderate hot-bed. Having laid a slight covering of any common mould on the bed, the roots are to be placed on this as close as they will go, when they should also be covered two or three inches with any light mould. By keeping the lights covered with mats, the shoots are easily blanched, or as easily obtained in a green state if wished, by allowing free access of light. Air should be given occasionally, especially if the bed prove over warm, and the shoots draw up too weak. Sixty degrees is the highest that should ever be allowed, but less will be found preferable. As the roots are quite useless after they are forced, the shoots should be cut as long as any worth using are produced, and the roots then thrown away. The best plan of obtaining a supply of roots for this purpose, is to

yearly sow as much ground for succession as it is intended to break up, of course using the oldest beds for that purpose.

In some large establishments, the beds in the open ground are so constructed, as to be forced at pleasure, either with hot dung or leaves; or as at Frogmore, with hot water. For this purpose the beds may be made three feet wide, the sides being formed by four-inch open brick-work, the alleys being about two and a half feet wide between the brick-work. In these alleys, the fermenting materials, or pipes are laid, and the whole is covered in with close boarding, so as to allow the beds to be got at without interfering with the source of heat. The beds must also be covered in, in any way most suitable, a moveable wooden framework being, no doubt, the best.

LAYERING.

MANY plants, when kept in a moist atmosphere, having a tendency to throw out roots from their joints, the idea of making layers must have very early occurred to gardeners. When the roots are thrown out naturally wherever a joint of the shoot touches the moist earth (as is the case with most of the kinds of Verbena, which only require pegging down to make them form new plants), layers differ very little from runners; but layers, properly so called, are when the art of the gardener has been employed to make plants throw out roots when they would not have done so naturally. The most common method of doing this is to cut half through, and slit upwards, a shoot from a growing plant, putting a bit of twig or potsherd between the separated parts, and then to peg down the shoot, so as to bury the divided joint in the earth; when the returning sap, being arrested in its progress to the main root, will accumulate at the joint, to which it will afford such abundance of nourishment as to induce it to throw out a mass of fibrous roots, and thus to convert the shoot beyond it into a new plant, which may be separated from the parent, and transplanted. The only art required in layering is to contrive the most effectual means of interrupting the returning sap, so as to produce as great an accumulation of it as possible at the joint from which the roots are to be produced. For this purpose, sometimes, instead of cutting the branch half through, a ring of bark is removed below the joint, care being taken that the knife does not penetrate into the wood; and at others a wire is twisted firmly round the shoot, so as to pinch in the bark; or a knife or other sharp instrument is passed through the branch several times in different directions: in short, anything that wounds or injures the shoot, so as to throw an impediment in the

way of the returning sap, and yet not to prevent the passage of the sap that is ascending, will suffice. Layering is a very common mode of propagating plants; and in nurseries often every shoot of a tree or shrub is thus wounded and pegged down. In this case, the central root is called a stool, from the verb, to stole, which signifies the power most deciduous trees possess, of sending up new stems from the collar of their roots when cut down. The seasons for performing the operation of layering are during the months of February and March, before the new sap begins to rise, or in June or July, after all the summer supply of ascending sap has risen; as at these seasons there is no danger of injuring the tree by occasioning an overflow of the ascending sap, which sometimes takes place when the tree is wounded while the sap is in active motion. In most cases the layers are left on twelve months, and in many two years, before they are divided from the parent plant, in order that they may be sufficiently supplied with roots. In nurseries, the ground is generally prepared round each stool by digging, and sometimes by manuring; and the gardener piques himself on laying down the branches neatly, so as to form a radiated circle round the stool, with the ends rising all round, about the same height.—*Gardener's Gazette*.

CHINESE MODE OF LAYERING.—The Chinese method of layering, which consists in wounding a branch, and then surrounding the place with moist earth contained either in a flower-pot or a basket, is frequently adopted in the Continental gardens; and it has the very great advantage of producing a young tree which will flower and fruit while yet of very small size. It is generally applied to camellias, orange trees, and magnolias; but it will do equally well for almost any other tree or shrub. When a plant is to be layered in this manner, a ring of bark is first taken off, and then a flower-pot is procured, open on one side, so as to admit the branch; and some moss being put at the bottom of the flower-pot, it is filled up with earth, and a piece of wood is placed inside the pot before the open part to prevent the earth from falling out. It may be fastened in its place by wires hung over a branch, or supported by four little sticks tied to the pot with string. The earth should be very moist before it is put into the pot, and, if the season be dry, it may be re-moistened from time to time. When the layer is supposed to have rooted, a tolerably deep notch should be made in the branch below the pot; and afterwards it may be cut off, and the young plant transferred with its ball of earth entire, to another pot or to the open ground. A simpler way of performing the operation is, using a piece of lead instead of a flower-pot.

A modification of this plan was adopted by Baron Humboldt in South America. When he met with any tree that he thought worthy of being introduced into Europe, he took a ring of bark off one of the branches, and then surrounding the branch above the ring with moist earth, he bound round it several strips of pitched cloth or oil cloth which he carried with him on purpose, so as to exclude the air, and consequently keep the earth moist. After an absence of two or three months, he returned to the tree, and cut off the branch below the bandage, when he generally found that it had struck root in the moist earth. In this way he obtained nearly all the rare and curious trees that he brought to Europe.—*Ib*.

THE WATER CRESS.

THE Water Cress (*Nasturtium officinale*, R. Brown) is a native of rills and streamlets, not only in Great Britain, but in nearly all parts of the world, having been met with in such situations, and in company with the Brooklime, (*Veronica Beccabunga*) its usual associate here, on the most distant parts of the earth's surface. Its use as an esculent is, no doubt, as ancient as it is universal, whilst the esteem in which it is held in this country is evidenced by the enormous quantities grown and brought to market in London, and other large towns, within the last few years.

Although there is what are termed the *Green* and the *Brown Water Cress*, the difference seems more owing to season and culture than anything else. At any rate, they are very slight varieties, although no doubt can exist, but this plant is as susceptible of improvement as others, if proper attention were paid in selecting the plants and saving seed.

The most successful cultivators of the Water Cress are such as can command a supply of running water near the springs from which it issues, as in the beds at Little Marlow, in Buckinghamshire, and at Rickmansworth, in Hertfordshire. Wherever a flow of water can be kept in command, either to let on or off the beds, there in general the Water Cress may be grown in considerable perfection; but if the supply be from the overflow of a pond, or other comparatively still water, there is generally so much weed, slime, and insects in it as to render it hardly fit for this purpose. However, where it is wished to grow this plant, the first thing is to have a sluice at the head of the ground so as to regulate the supply of water. If the beds are to be made in the course of the stream, then the bottom must be level, and a very slight fall given to it. If the space be two or three yards across, then at about six yards down the stream an

embankment should be made sufficiently high to keep back about one foot of water over the whole of the prepared bed. In this embankment a sluice should also be made so as to regulate the depth of water, or to lay it dry if necessary. Below this first bed others may be made according to the quantity wanted. If the bottom of the stream does not afford space enough, a system of alternate ditches and banks may be dug out of the adjoining land, having a leading gutter for the supply of water, with a sluice in it at the head of each ditch, and a similar gutter at the lower end to carry off the water. The banks should be left broad enough for cropping, and they will be found excellent places for crops of raspberries, strawberries, and all summer crops, from the facility with which they may be watered. When the beds are thus far prepared, the bottoms should receive a thick coating of gravel, chalk, or some such material, if not naturally furnished in that way. When all is prepared the plants may be put in, in a regular manner, about a foot apart each way. The plants should be a moderate tuft of the strongest and best of the old plants, and they must be kept in their places by laying a large stone on each tuft. After planting, the water should be let in so as barely to cover them, and not so much as that, if a brisk stream can be kept up, as it would displace the plants. When they are fairly rooted and growing the water must be deepened accordingly, especially in frosty weather, when the bed in use should be flooded deep enough to keep the plants far enough under water to avoid ordinary frosts. The beds should be planted in succession every one, two, or three months, according to the demand, and the old ones destroyed as soon as the plants become weak or foul.

SIMMONS'S PATENT HYGROMETER.

NOT less essential than the proper regulation of the temperature of the atmosphere of a plant-house, is that of its humidity; in other words, an artificial atmosphere to be adapted to the growth of plants, must provide certain conditions of humidity as well as temperature, and it is highly important to be able to become as conversant with the former of these conditions as the latter—to know, in fact, what amount of moisture as well as of heat, the artificial climate contains. The thermometer, as is well known, supplies every facility for becoming acquainted with the degree of heat. Experienced gardeners also know to a considerable extent by the feel and smell of the atmosphere when they enter it, whether or not it is in a proper state as regards the amount of moisture, but even to them, some means of ascertaining the

degree of moisture with certainty, and with as much facility as the thermometer affords the means of ascertaining the temperature, is of importance. Such a means is afforded by a new instrument, which has lately attracted some notice; we refer to Simmons's Hygrometer, which we shall presently describe. The importance of such an instrument to amateur horticulturists, we need not stop to point out, as it must be self-evident.

In general terms, this hygrometer may be described as consisting of "a thin slip of mahogany, cut across the grain, adapted to a pulley and spiral spring, connected with a vertical arm, resembling the hand of a clock. This hand is made to traverse a dial-plate marked off into degrees, expressing the amount of moisture in the air, between what is observed when the instrument is plunged in water on the one hand, and exposed to excessive dryness on the other." Thus, when the hand stands at 50 degrees, as indicated on the dial plate, a certain specific amount of moisture is as clearly indicated as the heat connected with the rise of the mercury in a thermometer to 50 degrees; and when once the value of the degrees as regards the amount of the moisture is learned, it will, of course, convey information of the most marked and satisfactory nature.

We have had an opportunity of witnessing the action of this instrument, when suspended out of doors against a shaded wall, protected from wet; and we can therefore state definitively from actual observation, that *it does act*; and that, too, in accordance with what is obviously the condition of the atmosphere as regards moisture. When the air is damp, as for instance, after a shower, the hand indicates, say 80 degrees, and probably this is about the point which, as a general rule, is suitable to stove plants. In warm sunny days (spring season), when, of course, the air is somewhat drier, we have seen it go back to 60 degrees. These facts show that the instrument works in a satisfactory way. Other circumstances connected with its use in the garden of the Horticultural Society, show even more forcibly its susceptibility of the amount of the moisture in the air.

There are two or three conditions of some importance which must be attended to, in using this Hygrometer. It must be *placed in the shade*, for the direct rays of the sun would be liable to disarrange its action; it must *not be hung in the wet, nor damped by any means*, for it will be obvious that this would at once act on the instrument, and produce a false indication; and it must *not be subjected to greater heat than is congenial to vegetable life*. It will be understood that it acts by means of the swelling of the cross-

grained piece of wood when absorbing moisture on one hand, and its contracting on becoming dry on the other; this moves the machinery which is attached to the piece of wood, so as to cause the hand on the dial plate to advance towards "wet" or "dry," as the case may be.

Objections have been raised against the principle on which this instrument is constructed; these objections may be of some force so far as scientific observations are concerned. For scientific purposes the hygrometers of Saussure, Leslie, De Luc, and Daniell are held—and, we believe, deservedly—in high estimation; but they require much care in making the observations—far more than is convenient to gardeners—and nice calculations, before the result is obtained. On the other hand, this of Simmons's indicates at once the amount of moisture in the atmosphere, with sufficient accuracy for all the purposes of plant culture. We should like to see these instruments brought into common use, for we are sure they would greatly facilitate the regulation of artificial climates for exotic plants.

THE PARSLEY.

THE Parsley (*Petroselinum sativum*) occurs in an apparently wild state in so many localities, especially in the south and south-west of England on old walls and rocks, as to have established a good claim to be now considered a native plant, although supposed to have been originally introduced from the south of Europe. It is a biennial plant, flowering about June in the second season of its growth. The plant and its uses are too well known to need further description.

The varieties of the Parsley are few; the common or wild plant is seldom grown except for sheep, or in game preserves, for the hares and rabbits to crop. When cultivated for these purposes, if on ground it likes, it attains a size and luxuriance far surpassing its appearance in a wild state.

Many names are given to the curled-leaved variety; but as any person may save as many sorts as they please from the same packet of seed, it is hardly worth while to try to describe any. Size, as well as the full and curly property of the leaf, is often looked to here; so that perhaps it may be as well to distinguish the *Large Curled Parsley*, as English, as there is a very excellent dwarf variety often imported from France (their *Persil nain très frisé*) which is well worthy of general cultivation in private gardens. It is very dwarf, and very much curled, being well fitted for edgings in the kitchen-garden, where room is of consequence. The *Hamburgh Parsley* is also called the

broad-leaved, and large-rooted Parsley. It is a larger growing plant than the common, with spreading leaves, and a large fusiform root, for which it is cultivated.

The culture of the Parsley is very simple; almost any ground seems to suit it. It is often grown as edgings; but if grown in beds by itself, proceed in March to draw drills about one foot apart, the ground having been previously dug, and scatter the seeds in them, covering them not more than half an inch, and rake the ground smooth. Keep the crop clean, and when the plants are in the rough leaf (the seeds lay thirty and more days in the ground, especially if two dry or old), thin them out from four to six inches apart. Two or three other sowings may be made from this time to the end of May, and, if necessary, another in August, under a wall or paling, to be as much out of the way of frost as possible. Plants treated as above will progress rapidly; and when the hard weather approaches, any desirable quantity of that sown in beds may be protected from ordinary frosts by the ground being stuck full of small spray of trees, over which mats or litter may be laid if necessary. Of course the sowings must be repeated every year, as the plants perish after seeding in the second year. If it be necessary to force any during winter or spring, the roots may be potted up and introduced to the coolest part of the forcing houses or frames, but this is seldom required.

As the root is the part wanted for use in the Hamburgh Parsley, of course a different treatment is required. To obtain roots of a large size, a piece of deep, rather dry, and poor ground should be selected, and half-trenched, if not already sufficiently and deeply stirred. At any favourable time, from February to the first week in April, sow the seed in drills one foot apart, and about half an inch deep, scattering the seeds rather thinly, and treading them in, if the ground is very light or very dry; in which latter case water them well just before the seed is sown. When the plants are well up, thin them out to at least six inches apart, and keep them clear of weeds, and the soil well stirred among them. Some of the earliest sown will be ready for use in August, and on the approach of frost the later ones may be taken up and stored in sand for use as wanted. They are much liked by many.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

LAYERING OF CARNATIONS.—This operation has been often well described, but the majority of operators cut the leaves short and square at top at the time they layer the shoots. Now

we have an insuperable objection to cutting the leaves at all, except those few that we must take right away, that is, those below the third good joint. These are necessarily removed to enable us to make the incision, and lay down the shoot. The only object we have here, is to denounce the shortening of the leaves, for the plant is thereby greatly weakened, while no single object is attained by it; besides, nobody likes to see a mutilated plant, and the ridiculous excuse that it gives more room is untenable.

THINNING OF STANDARD TREES.—Standard fruit trees are confessedly neglected. Whatever fruit comes is left to swell and ripen as well as it can; and unless the wind lessens their number by blowing some down, which invariably leads to the bruising of the remainder, the tree is distressed by having to support three times the number, perhaps, that it ought, and the fruit is not worth the trouble of gathering, because it has only had among the whole, what ought to have been devoted to a smaller quantity. As soon as the fruit is set, and has begun to swell, they should be gone over, and full half, if it be a full crop, should be taken away, chiefly from the crowded parts. This may seem troublesome, but it well pays for the trouble by the hardness and advanced value of the remainder. When they have swelled to nearly half their size, all the ugly and deformed and blighted fruit may be removed, and only a proper quantity allowed to perfect themselves. In going over these to get them in, a little time bestowed upon a first gathering—which should be early and only comprise the largest and forwardest fruit—will pay well; and the removal of these will aid the remainder in completing their growth and ripening. We have not here mentioned any particular fruit, for the thinning applies to all; but the gathering once quite early, before one-fourth of them are either useable or marketable, applies to all soft fruits that are taken ripe to market. Cherries, for instance, may be half-a-crown a pound to-day, and one shilling and sixpence to-morrow, and come down to ninepence the third day. The great object, then, is not to lose a day nor an hour, if it can be helped. Plums are also of the same changeable prices. If you can be first at market or first at table, the profit or the fame belongs to you; and in most instances this can be achieved by thinning the fruit, that it may have the benefit of a larger share of nourishment, and gathering a few as soon as a few can be obtained. The same applies to wall-fruit trees, but they are generally better attended to; it is only the standard trees which are so commonly neglected, and to which we would direct attention.

A PROPOSAL TO FLORISTS—It has always struck me as a great inconvenience that we are obliged to pay so much carriage for plants, and

that because we have no general association under proper management; and therefore, if I want Mr. A's Fuchsias, Mr. B's Verbenas, Mr. C's Dahlias (and perhaps also Messrs. D, E, F, G, H, and I's), Mr. Somebody-else's Geraniums, and so on, I have to write to all these separately, and obtain them as I can, at a large cost of carriage, and (as little orders are not always worth serving) sometimes not at all. Now, if there were any society to which all these people belonged, the entire orders required to be executed could be sent there, and one carriage do for twenty people's plants. Think of this.—*P.P.*

THE CHOLWELL PEAR.—This is a good hardy early Pear, worth cultivating, as it comes in season at the end of September or the beginning of October, when the supply sometimes becomes broken off. The form of the fruit is curved pyramidal, about three inches in length, and one inch and nine-tenths in diameter at the widest part of the section, which is about two-thirds of its length from the stalk; the eye is small, but open; the stalk slender, and obliquely attached, from half to three quarters of an inch long; the skin is smooth, thin, yellowish green on the shaded side, faintly tinted and obscurely streaked with dull red next the sun, which is also sprinkled with small dots; the flesh is yellowish-white, melting, buttery, very sugary and rich, with a musky flavour resembling that of the variety called Henri Quatre, or less so, that of the Seckel.

JUDGING APPLES AND PEARS.—"The way I test the merit of an Apple or Pear, is by reducing the flesh of the fruit to a pulp, by means of a little wooden bowl and pestle. The reduced pulp is then placed, in small quantities, on an earthen dish, and exposed for about fifteen or twenty minutes to the air. This I have practised at home, to decide the merits of cider apples, for years past; but last October, at our exhibition, I told my two fellow-judges of fruit, that I would save their teeth from the effects of tasting sour apples. I accordingly set to work, and having arranged the reduced pulp of about a dozen apples, in rows on a dish, where, with a number corresponding with each fruit, it remained about fifteen minutes, I then pointed out what I expected we should all agree was, the *best fruit* for the *press*, by the *depth* of the *brown tint* assumed by the absorption of oxygen." (*Mr. Williams, in Journ. Hort. Soc.*) It has been experienced that apples which cook of a white colour may be made to acquire a fine tint by paring and cutting a day before, so as to expose the juice to the action of oxygen, which invariably changes the colour.

MELONS.—The Duke of Sutherland's gardener at Trentham adopts the following plan

with the melons he cuts late in the Autumn :— He wraps them in paper, and lays them in a basket, the sides and bottom of which is also covered with paper; he then lays a sheet of paper over the whole, and places the basket in a pine stove for a period of eight or ten days, by which means the fruit acquires an excellent flavour, and is esteemed a great acquisition to the dessert during November.

EXHIBITING STRAWBERRIES.—A very great improvement might be effected upon the present plan of showing Strawberries, by which each fruit is picked separately. The evil of this is, that it discourages the small grower. Where a person has a large quantity of Strawberries growing, he can go over the whole and pick merely the finest fruit; and, as a matter of course, a dish so made up is better than can be produced by a person who has not half so many to gather from. A plan is adopted with forced Strawberries in some of our best English gardens, which might with propriety be taken advantage of at exhibitions. When in flower the trusses are thinned to ten blossoms; these are carefully set, and produce ten fruit, which being properly selected, grow and ripen about the same time, and come nearly of equal size; the whole truss is then cut like a bunch of Grapes, and thus sent to table. A similar plan adopted at exhibitions would be a test of growing Strawberries, and would give the small grower a chance of competing with the grower of large quantities. Suppose a dish to be required to consist of four trusses, each to have ten fruit on them, there would be no escaping a rigorous test of culture, and every grower would have an equal chance. The plan here referred to, that of the thinning of the blooms, might be advantageously followed in the culture of Strawberries generally, and a greater quantity of finer fruit would be secured.—*M.*

SIZES OF FLOWER-POTS.—The following list gives the size of each number, in inches, at the London potteries :—

	Across the top.	Deep.
Thumb-pots, sixty to the cast, are inside	2½	2½
Sixties; that is, sixty to the cast	3	3½
Forty-eights; that is, forty-eight to the cast	4½	5
Thirty-twos; that is, thirty-two to the cast	6	5
Twenty-fours; that is, twenty-four to the cast	8½	8
Sixteens; that is, sixteen to the cast	9½	9
Twelves; that is, twelve to the cast	11½	10
Eights; that is, eight to the cast	12	11
Sixes; that is, six to the cast	13	12
Fours; that is, four to the cast	15	13
Twos; that is, two to the cast	18	14

The above are about the sizes in inches; for

at each pottery they rather differ in size, and the pots do not shrink alike during the burning. Some potteries make them a trifle larger. but that is of no consequence to plants.—*Glenny's Almanac.*

CONIFERÆ OF OREGON.—The bulk of the woods over the whole of Upper Oregon, consists of the majestic and valuable *Pinus ponderosa*, attaining an average height of 150 feet, and not seldom a trunk from 4 to 8 feet in diameter, beautifully rounded, and clothed with reddish brown bark; the wood is very durable and heavy, on account of the great quantity of resin diffused through it; hence it is called "*arbre de gomme*," by the Canadian *voyageurs*. The Indians eat the seeds of this pine, but they are insipid, even when roasted. Another *Pinus*, of inferior stature, growing in small groves, comprises the whole of that genus over that immense region. This species is called "*Pinette noire*" by the Canadians. It never attains a greater height than from 40 to 50 feet, and very rarely so much; it has a grayish black and coarse bark. This is the pine of which the Indians eat the young cambium, which they scrape off with a knife, after removing the bark. It is a very cooling and by no means unpleasant article of food. These are the trees of the level *plateaux*, on stony rocky sandy soil. Far more sombre and dense trees, than *P. ponderosa*, fill with perfect darkness the deep defiles in the Green mountains, and principally the majestic *Thuja gigantea*; its average height is 200 feet, and the diameter of the trunk 10 to 12 feet, some larger. These trees are as straight as can be imagined, forming a slender pyramid with their many horizontal and slightly refracted branches, fringed with dense branchlets, and elegant broad fan-like foliage. The trunks are mostly hollow; the wood splits very easily, and is lighter, though not less durable, when exposed to weather, than cedar-wood. The bark is used by the Indians for various purposes, as for roofing their huts; they make a frail sort of canoe with it, and bags for carrying their roots, and use it for binding their fishing apparatus. *Abies balsamea*, and *canadensis*, both attain considerable size; the former is generally found near rivers, the latter is rare. A few trees of *Abies Douglasii* grow scattered in Upper Oregon, not in the Green Mountains, but here and there on the banks of the Columbia River. A species of *Larix* occurs on most of the grassy slopes, intermingled with *A. rubra* and *alba*. Lower parts of these mountains, especially towards Columbia River, are often closely beset with *A. rubra*; and such tracts are impassable until the fires have once swept through them, which destroys annually an immense quantity of timber. It is a curious fact, that while the

forest is left undisturbed, they are always composed of such or such kinds in almost unchanged proportion. Not so when fire has swept over and destroyed the pristine race of trees: then others spring up, which before were either not at all there, or in the minority. So where *Pinus ponderosa* is removed by fire, *Abies rubra* will fill that space to suffocation; if, after a few years, it is burnt again, another tree takes the place.—*Lond. Journ. Bot.*

NEW APPLES.—The *Pitmaston Golden Pippin*, is a variety raised by Mr. Williams of Pitmaston, from a kernel of the true Golden Pippin. It is a vigorous grower. It is a very sugary fruit, in use about the same time as its parent variety. This variety, which has been in bearing eight or ten years, continues to improve in flavour. The *Pine Apple* is another variety of the Golden Pippin, raised upwards of sixty years since by Mr. White of Whitby. It is larger than its parent, but resembles it in shape; its season of perfection is from December till February. The *Stoke Park Pippin* very much resembles the others. It bears well, but the wood is disposed to canker. It was raised more than twenty years since by Mr. Foley, of Stoke Edith. These three are all dessert varieties of great excellence, as indeed might be supposed from their nearness to the old Golden Pippin.

STRIKING CUTTINGS.—The absolute necessity of cutting all the pieces intended for striking, close under a joint or leaf, is maintained up to the very last writing of the very best writers. Yet there are those who maintain, and with some degree of confidence, that hard-wooded things will strike away from a joint; that is to say, that if there is a joint above ground to grow from, there need be no joint under ground to strike from. This has been proved, says Mr. Fairbairn, with *Camellia* stocks, which have been struck by hundreds with a leaf and a bud above ground, and half an inch or more of wood, without a joint, under ground. It is said, that the roots strike all round and in great abundance, and not partially, as is often the case when cut up to a joint. Mr. Logan says, that *Fuchsias* strike as freely at the parts between the joints as they do at the joints, and the roots are better developed than they ever are at a joint. If this be true, and there is no reason to doubt it, coming from two persons who own it has been their practice for years, it will double the capacity of all plants to propagate, and save one joint of every two, which is no small object. Presuming this to be the case with some plants, it cannot be with all, and we much doubt if it would do with any soft plant; they would rot instead of striking root.

Celery.—A contemporary writer avers that the wild Celery from the waste side of a high road, taken up young, and planted out in trenches, in the same way as we plant out the garden sorts, proves as solid and as fine as plants of the same size from properly-saved seed. We doubted it at the time, and procured some to try the experiment; we found it wild Celery when it was grown as well as we could grow it, and nothing but wild Celery. So far from its being like the garden Celery, it was not worth garden room; we therefore conclude, that the writer who thus hastily put forth his opinion, founded perhaps in part on fact, doubtless picked up his plants where the waste of some garden was thrown, and in reality found garden Celery. Nor is it likely that so much pains would be taken to keep seed from the best only, and to preserve each particular sort as select as possible, if wild Celery would prove as good as the cultivated kinds. We should not have inserted such a letter without our opinion of its fallacy.

PETUNIA FRAGRANS.—This is a rich purple flower, with violet shade upon it. It is of course valued for its perfume rather than its form; we have seen flowers which are very rich, though there is a point in the divisions of the corolla which is contrary to the standard, though very few are without the points at present. The blooms had travelled a long way, and had not much perfume when they arrived.

STOCKS.—A writer in one of the newspapers, fancies that it is the age of Stock seed that makes the flowers double. It has long been thought that blooms improved by the age of the seed, but there are many facts that tell against that being the only point in the Stock seed; for instance, one man shall sow half a packet of seed, and another shall sow the other half; one shall have nearly all single, the other nearly all double. Now how is this to be accounted for by such rule, when both seeds are from the same packet? It was a much more rational conclusion of a former writer, that it was caused by starving the plants at a feeble stage of growth.

LATE RASPBERRIES.—Mr. John Mearns thus describes his mode of obtaining a strong autumnal crop of fruit of the red and white Antwerp Raspberries:—"In May remove the young fruit-bearing shoots from the canes, leaving, in some cases, one or two eyes; in others cutting them clean off. Under either plan, they soon show an abundance of vigorous shoots, frequently three or four from each eye, which produce plenty of blossoms in the beginning of July; and on these a good crop of fine Raspberries is borne in August, when all the regular produce on the plants not thus treated is consumed."



GLENNY ON THE PANSY OR HEARTSEASE.

MUCH has been written upon the subject of this favourite flower; many different modes of treating it are adopted by different cultivators, and they nevertheless succeed. For our own part simplicity has great charms; and the less complicated the plan of doing every thing the better we are pleased with it. From the period at which the father of the fancy made the grand start with the new family of heartsease, we have felt an interest in it; and although the public give credit to several different growers for varieties, which in their turn had admirers, we owe the best varieties that were raised for years by Brown, Mountjoy, and many others round town, to Mr. Thompson, whose unbloomed and bloomed seedlings these people purchased, and in due time named as their own. The principal object to be attained in the growth of all Florists' flowers is to prevent a check in their progress, either by very cold winds, very hard frosts, or very long droughts. Nor are we to forget a mistake made by hundreds, which does check the growth, and that is the watering them in the hottest months with the coldest water. This is so common an error, and withal, it is so difficult to make people believe there is any mischief in pump water, that we have been

smiled at for our caution, when we have protested against the use of water that has not been exposed to the atmosphere. The soil on which the Pansy will succeed, almost if not quite better than any other, is that from rotted turves, with one-third well decomposed dung. If the loam be clean, that is to say, free from the rotted vegetable, the mixture should be one-third the pure loam, one-third leaf mould, and one-third dung rotted into mould. But if the ground of the garden be already good, about three inches of the leaf mould, forked into six inches of the ordinary soil, will be found nearly enough. The situation should be open; the plants should be put in the beds six inches apart one way, and nine from row to row: the beds should be four feet wide, and will consequently hold seven in a row across the bed. The Pansy never blooms so well as when the plant is small and well rooted; as it grows large the bloom is more abundant but smaller; therefore, when size of bloom and fine character are desired, as for exhibitions, the collection must be kept up by a constant succession of cuttings, to be struck and planted in similar beds. This renders constant attention necessary and forethought indispensable.

The procuring of proper varieties.—For a list

of these, persons who have paid but little attention, may look to the descriptive catalogue of a few that are always being exhibited; and, though not all we want, will afford occasional blooms as good as we can obtain with our present limited number of superior kinds.

Pansies are sold at the nurseries in pots, or drawn from the ground according to the season in which they are purchased. Nearly all of the leading cultivators keep a number of the principal sorts in pots for sale during the winter months; and a collection turned out of these into a rich bed, frequently succeeds at once better than drawn plants will at any time; but in proper season, you may choose your plants from the nursery-beds, and, by taking them up carefully without breaking the roots, you will check them but little. It is by far better to have small plants with strong roots, than to look for the largest plants; and, to begin with, we should recommend such of the following as may please by their description; but every one will come in occasionally fine; for Pansies, like many other flowers, are far from certain, and all of these will be found, at particular periods, far from good.

GOLIAH, (Bragg's).—The best dark purple self, very good round outline, small eye, plenty of substance and fine texture, and above the average size. The half-grown flowers, or, at all events, those not arrived at their full size, are the best for show in every respect. Edge pretty smooth.

NE PLUS ULTRA, (Buxton).—The best yellow ground flower, with dark sides and tops, or rather heavy dark borders to lower petals, and top petals same colour. A fine velvety texture, with the colouring rich; full size but not too large, and very good substance. Form better than average. Edge tolerably smooth.

DULCIFER, (Cook's).—Bright blue top petals and borders to lower petals; white ground very good; substance good, but upon the whole soft: size rather below than above average; form very good. A very striking variety when well grown, and worthy of general cultivation. Edge quite smooth.*

MARGINATA, (Thompson's).—A very beautiful flower, though not always certain: white ground, with narrow light purple, or lilac lacing all round the five petals. Edge moderately smooth, and form above the average. This, like most white ground flowers, rather a papery than a velvety white; but a striking flower in condition, and above average size.

WHITE SERGEANT, (Cook).—A large white, like most of them wants bleaching; but still it has many good qualities, such as substance, form, size, and moderately smooth edge. It is well worth cultivating among whites.

WHAT NEXT, (Logan).—Well-formed, thick-petalled flower, velvety texture, mulberry-juice colour, on cream ground; very novel, pretty, and under the average size.

ISABELLA, (Atwell's).—A full-sized white ground flower of average substance, with a narrow border of dark purple, large starry eye, apt to break through to the edge; fair smooth edge, and tolerably good outline: upon the whole a striking flower.

DIDO, (Turner's).—Bronzy puce colour, fine yellow ground, broad border to the under petals, smooth edge, tolerably good outline; size rather under average; eye very dark, fair substance, and a very delicate flower.

TOM PINCH, (Hunt's).—Beautiful white ground, with dark blue border to the under petals, very distinctly defined, eye blotched, smooth edge, good substance; outline rather broken by the divisions, where the lower petal laps over the sides; but from its great contrast a very striking show flower.

VENUS VICTRIX, (Garraway's).—Smallish white self with blue eye, smooth edge, tolerably good outline, substance under average: a pretty looking flower.

VICTORY, (Mountjoy's).—A moderately large yellow ground flower, with chocolate or bronzy purple lacing, smoothish edge, good substance, and fair outline.

TRIUMPH, (Cook's).—White ground, good substance, purple border, pretty contrast, fair shape, smooth edge, rather below than above the average size. It is frequently shown in great perfection.

SULPHUREA ELEGANS, (King's).—A pale yellow self, with fine dark eye, smooth edge: shape rather long than otherwise; size about average: very distinct flower.

REGULATOR, (Thompson's).—Yellow ground, broad chocolate band, smooth edge, very fair outline, pencil eye, substance moderate: size about or rather under average. A bright good looking flower.

PRINCESS ROYAL, (Atwell's).—A white self, but not very pure; dark blotched eye, good substance, very fair outline, smooth edge and an average size; when the white bleaches, which it will sometimes, it makes a good flower.

PRINCE ALBERT, (Cook's).—White ground, with dark purple band, rather broad, radiating eye, pretty smooth edge, good substance: size about average; very fair outline.

PIZZARO, (Thompson's).—Fine bold yellow ground flower, with fine outline, good substance, velvety texture, finely marked eye; average size. In short, a striking bright flower, with very smooth edge, and general good qualities.

MULBERRY SUPERB, (Cook's).—A fine mulberry coloured self, with dark eye, smooth

* The right flower is not out.

edge, fine texture, good substance, excellent outline; size rather below average: rather beaten in most points by Hamlet, but often in flower when the other is not: both are not good in one stand.

MARY JANE, (Hooper's.)—Pale yellow ground, light blue narrow border, smooth edge, fair outline, dark eye, moderate substance: size rather below than above average.

ARETHUSA, (Brown's.)—Fine white ground flower, with light purple marking, broad belt or margin, blotched eyes, smooth edge, good substance, fine texture, fair outline: a size rather above the average.

HANNIBAL, (Brown's.)—Pale yellow ground, broad mulberry band, large eye radiating, edge inclined to be smooth, fairish outline, good substance; size above the average: occasionally, the radiations of the eye will break through to the band.

CURION, (Brown's.)—Fine white ground flower, with deep blue edges, fair outline, pretty good substance, fine pencilled eye, tolerably smooth edge: average size.

BLACK PRINCE, (Pearson's.)—Grown for its colour only, which is very dark, and therefore desirable, if it could be transferred to a better formed flower.

BLACK BESS, (Cook's.)—Dark purple self of good substance, small yellow eye, fair outline, fine texture, average size, smooth edge.

CYCLOPS, (Thompson's.)—Straw-coloured ground, purple border, blotched eye, smooth edge, good substance, middling outline, average size or rather under; very brilliant flower.

DIAMOND, (Hall's, otherwise Hales.)—Dark seedling: a dark purple self of good texture, smooth edge, fairish outline, yellow eye, plenty of substance, and full average size, or perhaps rather above.

DUCHESS OF BEAUFORT, (King's.)—Three lower petals, straw-colour, upper ones purple; very distinct variety, but not a fine shape; edge moderately good, but the outline deficient.

EXQUISITE, (King's.)—Fine white ground with narrow edging, small blotched eye, fair substance, middling smooth edge, and good outline; full average size.

ECLIPSE.—Fine brown purple top petals, and bands to the lower ones. There is a trifling shade of difference between the side petals and the lower one, but when the flower comes in perfection this is hardly seen; substance good, edge smooth, size full average.

JEHU, (Thompson's.)—Purple upper petals, three lower ones yellow, rather under than over average size, smooth edge, large radiating eye, good substance, and tolerably good outline.

VENUS, (Thompson's.)—An uncertain flower, but at times very beautiful; pure

white ground with very slight edging of bright violet on the upper petals; very rich eye, above the average size and form; and a pretty flower on a stand.

NORTH-STAR, (Bragg's.)—A showy flower, but the ground which should be white does not always bleach; the back petals and eye are purple, and the texture velvety and rich, and the form better than average.

CONSERVATIVE.—Back petals dark blue, lower petals lighter, with fine black eye; but the general appearance is cloudy and undefined.

MULBERRY SUPERB, (Hamlet,) is much such a flower as already described. It is more of a chocolate colour than any thing else, but in form, texture, and flatness it is among the best of the selfs; the centre of the flower is lighter than the outer portions, and it shows a good dark eye.

BRIDEGROOM, (Major's.)—Rich purple back petals, and deep edging of the same round the lower petals. The texture and substance are good, but there is a want of distinctness occasionally. It is, however, an improvement on Coronation, which is still grown.

MISS NUGENT.—A flower of good texture; average form, rich mulberry colour on a white ground. The eye is what some call poor, but it is a very useful flower when grown well, though uncertain.

CORONATION.—Rich purple upper petals deep uneven border of the same colour; on the lower ones not enough white to make a good flower. The radiation of the eye often breaks into the border, and it is rougher in most cases than we like.

MONTHLY OBSERVATIONS AND MANAGEMENT.

JANUARY.—This month, if proper attention has been paid, you have in your frames a number of small plants of your better kinds, in thumb-pots or small sixty-sized pots, ready to plant out, or to pot into larger-sized ones, for blooming. You will also have your beds doing well with the plants put out in the two seasons of autumn, October and November; the beds having been protected of a night with loose litter, which has been removed when the weather was mild. Not that ordinary kinds need even this; but they are always better for it and certain. You will likewise have in your frames a collection of the better varieties in large pots, in which they have been since autumn and are now growing into strength. Cuttings also, perhaps not yet potted off, may be in pots, in pans, or under hand-glasses in the open-air; these, if well struck and beginning to grow, may be bedded out in mild weather, or potted off into thumb-pots or sixties; but if bedded out, you must be more careful to

keep off the frost than if they had been planted out in autumn ; for they would easier take harm. Go carefully over all the out-beds, and see whether the alternations of frost and thaw have disturbed the plants and roots at all ; and where they have got the earth spongy, or hollow, or broken, press it gently down, so that the roots may be closed in solid, but not too hard : also hoe between the rows and clear them of weeds if there be any. Those in large blooming-pots should have the earth gently stirred about on the surface, and laid smooth and level afterwards. Examine all the pots that look damp, to see that the draining is good, and if not, turn out the ball of earth ; remove the bottom crocks, put in fresh ones, and a little dry mould, and adjust the ball to the same height as before. If any of the plants, from being well struck when potted out, should be stronger or longer, or have any long side shoots that are not wanted, take them off, and strike them under a bell-glass in a pot. If you have any slight bottom heat they would root more freely, and when once struck they may be first hardened off in the pot for a time, and then be potted off and placed among the other potted plants ; they being of course far behind others to succeed them either in large pots or beds. By going over the whole of the plants, many shoots can be taken off with advantage to the plants ; and, perhaps, some one or more of every sort that we are anxious to propagate, and these when struck will form an excellent succession to those now established. The frames or pits must be covered against frost, for this is more fatal to plants in pots than plants out of door.

FEBRUARY.—The changeable nature of our winter months, renders the treatment that can be laid down for several, very liable to be applicable to a past or a future one more than to the present month. So often indeed is January or February a month of complete frost, that either will defeat any system that can be laid down. If January has been a month of this kind, the last month's directions would all through apply to this. If, on the contrary, it has been genial, and the treatment has been carried through, the cuttings taken off last month will be struck during this, and may be hardened off if they have been in a little heat ; and by the end of the month potted off, one each in a sixty pot, with a little moss for drainage, as crocks take too much room, and the moss will last quite as long as the plants ought to remain in the small pots. If the weather be favourable for planting, struck cuttings may be bedded out ; but if unsettled, or very wet, or there should be drying winds, it is better deferred ; because they will take no

harm by delay, whereas hardly any thing is more fatal to young plants exposed than drying winds. And if the ground is very wet, it is unfavourable for planting, as it cramps and confines the roots in a manner that they are a long time getting over ; and if a frost comes in the meantime, the wetter the ground the more fatal it proves : indeed, it will frequently cut the tender stem of the heartsease as if it were severed with a bruise. If you have plenty of good seed you may sow a pan or large pot thinly, and place it in the frame. If the weather be mild it may come up and form an early season ; and if it be cold and frosty, it will only be a little longer coming up ; but those who wish to shine in this flower should not depend on a single season, but rather keep a succession of seedlings as well as cuttings ; and they should also save the seed in the different seasons of gathering, and make their observations of the flowers saved from the season of saving, and their memoranda of when they bloomed, how they turned out, and any other particulars worthy of remark. None but those who have so done can form an idea of the value of these memoranda, nor of how much has been learned by the observance of apparent trifles. Plants may be shifted from small pots to blooming pots if required.

MARCH.—Whatever blooms come on the open beds that you design to cut from, may be removed as fast as they come, and the more backward they are cut off the better, for blooms and seed-pods greatly distress plants, and should not be allowed to complete themselves until wanted, either for appearance in the garden or for exhibition. It may be recollected by many young Pansy growers, that when they allow a plant to bloom as it will, the flowers soon get smaller, and they surprise their owners by degenerating. When they are wanted for the ornament of the garden, they may be kept in flower a long time by cutting off the decaying flowers, so as to prevent any seed-pods from swelling, for they distress the plant, of the two, more than an abundance of flowers. Litter must not be neglected in this month, to keep off frost. Young plants may be bedded out where they are to flower, and the beds, that were autumn planted, may be top-dressed with rotted cowdung, or dung from an old melon bed ; but it should be examined for insects and grubs, which are frequently found in rotten dung, and would perhaps destroy the plants ; for it must be kept in mind, that mischief lurks in all exposed composts naturally rich, and that plants would be far better without dressing, than dressed with anything containing it. The best mode of top-dressing is to fork the surface of the ground, so as to open it a little, but very carefully, that you

do not disturb the fibres. This should be done with a hand-fork; then lay heaps of the dressing between all the rows, and level it down among the plants, so as to be a good half inch in thickness. This will wash down among the roots with the gentle rains that fall at this season, and will greatly increase the size of the blooms. The first exhibitions that can take place are at the Auricula shows. These are from the 20th of April to the first week in May; therefore, except for appearance in the garden or for seeding, no blooms need be encouraged at present. The plants in blooming pots will require attention, plenty of air, and liberal watering. Continue taking cuttings of those you desire to propagate, and striking them in pots, under glasses that touch the soil all round, so as to exclude air; the plants in small pots may be also planted out in beds, for the very life of Pansy-growing is to keep up successive beds, however small they may be. The most troublesome part of the culture is that of keeping up the protection of litter all the winter, when there is a danger of frost; and this is neglected by many growers, who think it not worth the trouble. Seed may be sown.

APRIL.—This month is a busy one. The practice of last month holds good all through, and especially the protection at night. It is this which gives plants in large pots, and kept in frames, such an advantage over out-of-door beds. Not one in twenty will take the trouble to protect the beds, and the plants suffer in consequence. The flowers are almost sure to be hare-lipped, because, when the flower is opening, that very portion is the first exposed, and is almost sure to be checked, and the indentation in the bottom petal is a certain consequence, because that has received a blight, while the more protected parts continue growing; and thus many varieties not naturally hare-lipped, as it has been called, become so. Now is a good time to sow the main crop of seedlings; but if you have saved some good seed carefully, and your principal lot is from the general collection, grow them away from all others; you are not so likely to get good ones from a thousand of the general picking as you are from a single selected and encouraged pod. The seed may now be sown in the open air, in a bed free from large stones, unless it be very choice, and if so there ought not to be a seed lost, for it is as likely to prove a good one as any other; that which has been saved with due regard to the quality of the flowers it has been taken from, deserves sowing in pots or pans, every seed being covered by sifting the mould over it. Those in pots are now rapidly advancing, and will give some portion of flowers by the end of the month; but all flowers should be picked off as

soon as possible, until you begin to want them to stand for use. Take cuttings as usual, wherever they can be spared; pot off or plant out those ready struck; and all those in small pots, not wanted for sending away, should be at once put out, or shifted into blooming-pots, as they will be taking harm if confined in the roots at this growing time.

MAY.—This month is perhaps the best in the year for showing, and the flowers come out in perfection. The Pansy now begins to brighten up the garden; and when you intend them to keep up their brightness by quantity of flowers, instead of showing, all you have to do is to water in dry weather all over the ground, between the rows rather than at the base of the plants themselves. The ground should be literally soaked, before the sun is up, or after it is down; the latter is the better, because the plant is then feeding all night. The blooms should be removed as they decay, and no seed-pods be allowed to perfect themselves or swell, as that lessens the flowers, and soon throws the plant out of bloom. This cannot be too strictly attended to. On the other hand, if any fine flower strikes you as better than usual, tie a piece of bast-matting round it, and save the seed; but let not other pods perfect themselves on the same plant, and, generally speaking, it is worth while to take off the blooms if there be too many; or if two or three other flowers come in fine character, it may be better to let three or four pods come on. The side shoots should now be taken in preference to any other cuttings, and they will strike very freely under a hand-glass in the common border, shaded a little by a transparent cloth, or by a common newspaper, from the heat of the sun. The cuttings, that is, any that may be wanted beyond what the side shoots supply, may be taken from the largest shoots; they may not strike so freely, but they will strike in good time, if you shade them from the hottest sun, and keep them well watered. Fork in the top-dressing, and smooth the surface, so that waterings and gentle rains may wash it in, and nourish the now spreading roots. Blooms intended for show must be protected from too much sun, and from heavy rains; the tops of the frames should be taken quite off those blooming in pots, at all times when the weather is mild enough, and be only put on to keep off heavy rains by the glass, and the sun, by shading. Plant out fresh beds.

JUNE.—The Pansy is now in the height of bloom, and if attention be not paid to the directions for removing fading flowers and preventing seed-pods from swelling, they will be out of bloom almost as soon as they are in. Occasional waterings will be found necessary, unless it be a rainy season; and as rain, par-

ticularly if at all violent, splashes up the grit, and destroys the flower, hand-glasses, or some other covering, should be provided, to throw off excessive wet and prevent the splashes. The most simple and complete mode of preventing mischief from both rain and sun, is to hoop the beds across, and put some rods along the tops and on each side, half down; on this throw a transparent calico in the evening at sunset, and when violent rains or very hot sun render it necessary; otherwise attention must be paid to the single individual flowers, wherever they may happen to be. But it must be remembered that the splashing of mud will injure very backward blooms, so that they do not get over it; the stain remains upon them throughout the whole time; so that it is of no small importance to prevent this if you have any idea of showing. Struck cuttings may now be planted into new beds, and be well watered, and the earth should be stirred on the surface, and top-dressing put on, as soon as the cuttings so planted out begin to make fresh growth. Some of the plants that come forwardest into flower may be spread round, and laid flat on the bed, and a heap of compost put in the middle, so as to completely lay all the shoots, as it were, underground, except the ends. These should be afterwards watered and kept pretty moist. It is a simple way of layering all the shoots, and is done very quickly. It is in contemplation of this, that we recommend planting nine inches apart in the beds. In Scotland this has been a very successful mode of propagating, and we once had a specimen sent us of a plant so laid, and taken up with all its branches to it; we really believe we could have taken fifty or sixty rooted plants, for every eye was struck, and the little branch from it was grown, so that, in fact, every joint made a plant. But many who serve a bed thus, may not want the plants, and in that case, the end of every shoot makes a new strong blooming plant, which again covers the bed with flowers. When the beds are planted out in this month, it is well to fork in an inch covering of rotten dung, mixing it up to the depth of three inches, and planting them in this will set them off growing immediately. Where a bed is at all exhausted, put a pound weight of good Peruvian guano, or half a peck of rotten cow-dung, or a quart of very rotten poultry dung, into five gallons of water, and, when well mixed, give the bed two good waterings, a week apart, and several plain waterings between whiles; otherwise, even this diluted stuff would be found too strong. Seedlings that are large enough may be planted out, three inches apart, in rows six inches from each other. Seedlings that are in bloom must be examined from day to day, and, instead of marking the best, throw

away every one that is inferior as soon as it opens enough; but, if there are certain good properties, such as roundness, thickness, and smoothness of edge, you must not care so much about colour, for it is very possible that the flower may come out of character, and therefore may be left to prove itself as to size and colour; but root out and destroy all thin petals, all that are notched and serrated, all that are long instead of round, or curly or crumpled, so that, in all probability, the bed may be cleared without finding a dozen worth trying; this, however, depends on the seed. As fast as they are rooted out, fork up the place, and put others in; it will keep the bed full, and save trouble, and keep seedlings together.

JULY.—This month is not favourable for blooming the Pansy, but, nevertheless, the seedling bed is interesting. Those which have been planted to fill up the vacancies occasioned by the rejected novelties, are here and there flowering, and require constant watching, that they may be thrown out as fast as they bloom and show themselves unworthy; and have others planted from the seed beds, or seed pans, in their place. By thus planting in the vacancies, the bed is always kept interesting, and room saved. Those which, by continuing in good character, establish a claim to a place in collections, may be propagated by taking off the small side shoots as fast as they come and grow large enough; and as the main shoots become long enough to be spared, the ends may be taken off to be struck. This will induce further side growth, and extend the branches. It is highly desirable, with regard to these approved seedlings, to prevent their seeding, by cutting off decaying flowers before the pods swell; and if you are once satisfied, so as to require no more blooms, and to want all the increase, take off the buds as they come forward, instead of allowing them to bloom, for the plant will grow more rapidly, and give more shoots for cuttings. These very choice things should be struck in pots or pans, in cold frames, or in an open, shady, or artificially-shaded border, under bell or hand glasses. The beds of Pansies should be treated as last month, and where they have gone by their perfection, they may all be layered, by earthing the centres and burying the stems, all but the ends; or be cut in pretty close to the root, fresh earthed, and be allowed to throw up fresh growth for cuttings; or, as another alternative, they may be taken up at once, and torn to pieces, the portions which have roots to them being planted out at once, and such of the others as will make good cuttings being prepared and put in for striking. As the Pansy is a flower for all seasons, good enough for gardens, successive beds may be kept up, by

planting out cuttings as they strike; and the brilliancy of a garden may be greatly increased by having plenty of the brighter varieties all about the borders, or in the compartments of Dutch or geometrical gardens, or in the clumps about a grass plot or lawn. In other matters, look to the previous remarks.

AUGUST.—This month is perhaps the worst for blooming the Pansy; not but that young plants, seedlings, and well-established ones not bloomed before, may come out well in shady places where the soil has some strength in it, but that generally, in exposed situations, they go off flowering altogether, especially if the cutting off the decaying blooms to prevent seeding, has not been well attended to. We have already said these plants should be disposed of in one of three ways—either by laying down the shoots and covering all but the ends, by cutting off all the old growth close to the roots, or by taking them up and tearing them to pieces, so that the rooted portions may be re-planted to grow; and if any of these rooted pieces are too long for general use, they should be shortened to two inches or so, otherwise they would continue to grow long, and never make good plants. The fragments should be sorted, that those fit for cuttings may be used, and those not good for anything may be thrown away. The watering of each bed as it comes forward to bloom, with manure water, about twice, or if the soil be not pretty good, about three times—a good week between each watering, and in the intermediate period with rain or other soft water—will be found beneficial; but the time to do the manure watering is when they are coming into flower. The plants which have been flowering in pots may be cut back, to induce a growth of small shoots for cuttings, or may be laid down and earthed, or turned out altogether, and parted, as those in beds are, to plant the rooted portions, and strike the best of the others. Attend to the seedling beds, as before directed; planting out those which are ready among the various pans and patches of seedlings must go on, but it is well to keep a supply to fill the vacancies made by those which are cast out as they prove worthless. This month great attention must be paid to watering, as the earth generally dries up fast, and these plants, which have their fibres all near the surface, soon exhibit the ill effects of parching weather, unless the ground be well and frequently saturated.

SEPTEMBER.—This month is favourable for striking rather a large quantity of cuttings for potting off to protect in frames, and for storing in beds. For blooming in pots you should select the short side-shoots, as they make the best plants, and any that are at all scarce, will be worth hastening a little by

slight bottom heat, though in a general way they will strike in the common border. It is, however, a convenient, and generally speaking the best way at this time of year, to strike each of the best or choice sorts in separate pots under bell-glasses, for the purpose of potting off each sort as soon as they strike, as there will often be two or three weeks difference between the first and last; and also for the facility with which they are protected against sun, rain, and frost in common frames, and removed, if necessary, from place to place; besides, as some varieties are tardy strikers, it is well to be able to remove them in case of necessity to a slight bottom heat. Plant out in store beds, or in regular blooming beds, all struck cuttings, unless they are required in pots, and pot such as are to be in frames all the winter. The great object in the culture of the Pansy is to keep a constant succession of plants raised from cuttings, on account of their always blooming best while young, and actually dwindling if left to themselves and allowed to grow rambling. Weed all the beds, and still water in dry hot weather. The practice of last month may be adopted in all cases, and with regard to seedlings, all the spring and later sown ones will be rapidly coming into flower until cut off by the frost. Persevere in examining the beds almost daily, and throwing away all those which cannot, from their roughness, flimsiness, bad shape, or from crumpling or curling, be of the least use, and fill up their places. The marking of flowers may be very much out of character, and apparently not worth keeping, but if good in form, texture, and thickness, will be well worth continuing in the bed for further trial.

OCTOBER.—This month, in most seasons, is a continuation of the same kind of weather as that which is experienced through most Septembers, and there is rarely any frost sufficiently hard to injure plants of this tribe. Unless plants are required of particular sorts, the cuttings put in to strike this month may be confined to those which make the best plants. Cuttings that have struck and begun to grow may be put into small pots, one in a pot, to be placed in frames for the winter, and either shifted from time to time to larger pots to bloom, or kept as store plants. The blooming of seedlings and the planting out to fill the vacancies of those thrown away, may go on as usual, but the greatest care must be taken as to littering them of a night as soon as the frosts threaten, for otherwise some of the best may, in their young state, perish; but when the seedlings are too weak to be trusted out of doors, it is better to keep them in their pans, unless they are drawn up weakly through being too thick, in which case they should be pricked out into pans or pots, an inch apart, so as to

strengthen a little under glass before finally potting or planting out. When you are sowing seed you must watch for the particular pods you marked and wanted, and throw the others together as common. Dig beds intended for Pansies, and dress with a little rotten cow-dung or leaf mould, as much as would lay two inches thick all over the bed, and this should be mixed with about six inches of the soil, and well incorporated. It may then lay rough dug or ridged all the winter, or until wanted. The bed should be dug deep for turning over, and the dung forked in, so as to mix well with the top six or eight inches, and no more. Obtain new plants this month, as far as practicable, as you have a chance of getting them strong by the spring, but if you get them much later they may as well be left till the spring altogether.

NOVEMBER.—In this month of change and garden improvement, many of the beds in which Pansies have grown are turned to other account, and therefore a number are removed from the ground: if these are good for any thing save them; soak the bed well before you take them up, and remove them with all the fibres of the roots whole; by washing them out and pulling them to pieces, you will find many young plants among the pieces, that is to say, many of the shoots that can be torn off with roots already struck; other pieces may be planted in pots to strike, but generally there will be enough plants without striking any more to answer all purposes; nevertheless, when a stock is required let all be appropriated, and if you can give slight bottom heat the better. This month you should make all the alterations and additions you intend; it is favourable for making new beds and improving old ones. If you could not get your new flowers in, last month, try this; but immediately plant them in pots, and get them into frames, for any thing choice too often reaches us so weakly and unworthy of being called a plant, that a good healthy cutting would, in our mind, be far more valuable. They frequently have so very little fibre as to be much more difficult to recover, than it would be to strike them over again; and, when a plant has created suspicion, we have examined the base of it, and, perhaps, found a hard corny substance instead of a root, or, may be, a poor weak fibre or two on one side, and a swelled hard base. In such cases we have frequently cut off such base to the next joint, and struck it again; but in most cases by potting into fresh stuff, and giving a slight bottom heat for a week or two they have wonderfully advanced, and by cooling gradually they took their places among the rest in the cold frame without any danger or damage.

DECEMBER.—The wind-up of the year forms no division of seasons, though in calendaric matters we must begin and end somewhere. The management during this month assimilates nearest to that for January, for protection to all plants that suffer from cold is as likely to be required in December as in the month following. Indeed, in this fickle climate, there is no calculating on even a likely period between December and May to be free from frost or to have frost. The whole time between September—which generally cuts off the Dahlias and other under flowers—and May—when we often see the Tulips turned black with it—we are never perfectly safe a day; and though we have known seasons in which there has scarcely been a frost, we have had other seasons in which there has been hard freezing every night and many days for months together. In December a frost will frequently come very severe, and being in the midst of a free autumnal growth, it is very trying to plants. We therefore now commence with the month, preparations for a steady observance of the necessary protection at night, and its continuance in day-time during hard frosts. The frames in which all the potted plants are, require particular attention, because the frost once allowed to get through the sides of the pot, affects the most tender fibres, which are precisely those from which the plant is deriving the principal nourishment. Many persons plunge their potted plants in ashes or tan to protect the sides, and some plunge them in the earth itself; we dislike this chiefly on account of its getting damp and inducing mildew, and tan or ashes are no better, for they retain the moisture that goes through the pots when they are watered. The bottom of a frame, or rather that on which the frame stands, should be so hard as not to admit the water into it, and sufficiently sloping to let it run off; but they require the most careful protection against frosts, and the best is transparent waterproof calico or thin canvas. This, while it confines the natural warmth of the earth within a well-made frame, does not exclude the light, and by throwing off the wet, instead of absorbing it as mats or unprepared cloth does, would do less harm in a week's close confinement during bad weather, than ordinary mats or cloths would in twenty-four hours. It should be observed, that for ordinary night frosts the covering of the top is sufficient, but if there come a succession of hard frosts, the covering should reach the ground to confine the natural warmth; and all frames should be close and well made, and have the bottom banked up a little to prevent draught under the wood-work: a little gravel or earth laid sloping round the outside is the

best. Many build a wall of turf round the wood-work, and nothing can be warmer, but in ordinary winters it is unnecessary, and all turves harbour vermin more or less.

The Pansy was not only brought into notice by Mr. Thompson of Iver, but besides being

successful himself, he sold many seedlings unbloomed to Mountjoy, Brown, and others, who when they bloomed named them, as if they themselves had reared them, so that he may very fairly be said to be the father of the fancier, as well as the father of the fancy.



PROPERTIES OF THE PANSY OR HEARTSEASE.

FIRST.—It should be round, flat, and very smooth at the edge, every notch, or serrature, or unevenness, being a blemish.

SECOND.—The petals should be thick, and of a rich velvety texture.

THIRD.—Whatever may be the colours, the ground colour of the three lower petals should be alike: whether it be white, yellow, straw colour, plain, fringed, or blotched, there should not in these three petals be a shade difference in the principal colour.

FOURTH.—Whatever may be the character of the marks or darker pencillings on the ground colour, they should be bright, dense, distinct, and retain their character, without running or flushing, or mixing with the ground colour; and the white, yellow, or straw colour should be pure.

FIFTH.—The two upper petals should be perfectly uniform, whether dark or light, or fringed, or blotched. The two petals immediately under them should be alike; and the lower petal, as before observed, must have the same ground colour and character as the two

above it; and the pencilling or marking of the eye in the three lower petals must not break through to the edges.

SIXTH.—In size there is a distinct point, when coarseness does not accompany it: in other words, if flowers are equal in other respects, the larger is the better; but no flower should be shown under one inch and a half across.

GENERAL REMARKS.

RAGGED edges, crumpled petals, indentures on the petal, indistinct markings or pencillings, and flushed or run colours, are great blemishes; but if there be one ground colour to the lower petal and another colour to the side ones, or if there are two shades of ground colour at all, it is not a show flower, though many such are improperly tolerated—of course the yellow eye is not considered ground colour. In selecting new varieties, not one should be let out which has the last mentioned blemish, and none should be sold that do not very closely approach the circular form.

One of the prevailing faults in the so called best flowers is the smallness of the centre yellow or white, and the largeness of the eye, which breaks through it into the border. We are so severe in these matters ourselves, that we count the very best of them no bloom in summing up the good ones; there are few stands, even of thirty-six, that contain twelve good show flowers.

The Hare-lip, as Mr. Davis in a descriptive catalogue called the indentation at the bottom of a Pansy, is a very common fault, and often belongs not to the true character of a flower. When a Pansy is opening this is the first bit exposed, and cold winds, hot sun, or blight will attack it and check the growth, while the

rest of the bloom develops itself, and thus leaves a notch or indentation, though the same flower, if not blighted, will come whole and perfect in the bottom petal.

The Pansy is one of the flowers that is, perhaps, the furthest of any removed from its original form, to meet the once supposed impossible shape given out as the model of excellence by the Metropolitan Society of Florists and Amateurs; and those who remember the once favourite Lord John Russell, that was deemed a gem in its way, and compare that five armed windmill with the circular blooms of the present day, will not wonder at the ineredulity of those who thought a circular flower impossible.

GARDENING CALENDAR FOR JUNE.

THE CONSERVATORY.

THE general features of the treatment recommended at p. 207 will be applicable. The early flowering winter plants will, for the most part, have nearly, or quite, completed their growth; and, as soon as they become matured, will require to be brought to a state of rest. As much coolness as can be secured will be desirable to effect this condition.

Temperature, &c.—To prevent, as far as possible, subjecting the plants to the high temperature of this period of the year, which would, of course, be augmented, too, by the glass roof of the building, it is necessary to have the ventilation so arranged as to be as perfect as possible in its operation. Both day and night, for two or three months to come, the house should, as gardeners express it, "stand at air;" that is, the sashes and ventilators should be opened to the full extent, both day and night. A portion of night air was recommended last month, which will have prepared the plants for full exposure, but they must be subjected to it gradually. The object is to submit the plants, as nearly as possible, to the same condition as greenhouse plants experience when set out of doors in summer. There are two cautionary recommendations which it will be proper here to notice:—first, the air, though admitted to the full extent which is practicable, should never be allowed to enter in currents: to be more plain, it is desirable to *open all* the means of ventilation to the extent that may be necessary, rather than to *open a few* to a much wider extent; the consequence of the former is the most perfect interchange of the external and internal volume of air that can be secured; the latter causes, what we have recommended to guard against, namely, cold draughts and strong

currents of air. Another point is this: it is possible, indeed in a collection it will be almost certain, that here and there a plant will be later in making its growth, and will, consequently, be less advanced now than those for whose benefit we are directing full ventilation. If it be a greenhouse plant, of a hardy constitution, it will in no way be injured, but rather benefited, by the ventilation; but if it should be a plant of a more tender nature, it will be proper to keep the sashes closed which are in immediate contiguity to the plant. This precaution is not often, but may be sometimes, necessary.

Watering.—Refer to the directions already given at p. 207.

Shading.—This attention must be persevered in when the sun is powerful: it will every day become more necessary. Shading adds much to the coolness, which perfect ventilation is intended to secure.

Climbing Plants.—It is an indispensable point of practice to continue the pruning, stopping, and training of these plants, without intermission, throughout the growing season.

Roses.—There is no flower more highly prized than these, and therefore they should always be provided. Some of the tea-scented and China kinds, which do better in a cool conservatory than anywhere else, should be provided and potted now, and they will bloom in August.

Potted Plants.—The majority of the potted plants which are kept in the conservatory, are plants in bloom brought in for the purpose of decoration; their treatment will, therefore, be found under other heads of the Calendar. The permanent plants being generally planted out

in beds need little direct attention at this period beyond occasional pruning and watering. Plants in flower require plenty of water.

Sweet-scented Plants.—Provide a quantity of such things as China-roses, Sweet-briars, Aloysias, Heliotropes, and Sweet-scented Pelargoniums, for the autumn; they will be sure to be in request. Keep plenty of Mignonette raised from seeds: never be without a supply of this odorous plant.

THE GREEN-HOUSE.

The business of potting must be proceeded with according to the growth of the plants. Many of what are termed hard-wooded plants seldom require more than one annual shift to a larger sized pot, and this should be done just before they begin growing, whenever that may be. When it is desired to make the plants progress very rapidly, they may be potted twice, or oftener; but plants of this nature seldom need more than two pottings in a season to secure the fullest extent of their growth. Free growing soft-wooded plants, on the other hand, are benefited by being potted frequently—perhaps every month—if they are required to grow large, and can be provided, at the same time, with a proper situation for their growth. The green-house will now, when their own inhabitants are moved into pits or out of doors, provide accommodation for the growth of tender annuals.

HOUSE FOR MISCELLANEOUS PLANTS.—Seedling plants raised during the season must be potted on occasionally, in order that they may become well established before winter: where it is desired to bloom them they should be liberally shifted. In general, potting and propagation may be proceeded with amongst green-house plants, and a liberal supply of water will be required. Most of the plants may be placed out of doors, and the house appropriated to tender annuals.

Temperature.—Allow perfect ventilation to regulate the temperature, only avoid subjecting the plants to rough and very cold winds; the latter, however, very seldom occur at this time of the year.

Watering.—A regular and liberal supply of water should be given to the plants, for nothing is more hurtful to them, in the progress of their growth, than a deficiency of water; it must not, however, be given them so as to saturate the soil, but they should be allowed to get nearly dry before a fresh supply is given to them. In order to understand what is meant by allowing the soil to become dry, set aside a worthless plant, and allow it to dry until it begins to droop; the plants must not get so dry as this, before they are watered.

Potting.—Continue shifting any of the plants that require it, especially soft-wooded

plants, seedlings, &c. Hard-wooded green-house shrubs may be potted now, if not done before, but they seldom require more than one annual shift. Cuttings which are rooted, and seedlings which are large enough, may be potted off. In general, seedlings are better for being what is termed “pricked out,” that is, transplanted carefully an inch or so apart in other pots or boxes, as soon as they are large enough to handle; by this means the roots become more numerous, and the plants may be better transplanted again subsequently.

Pruning.—Nothing is of more importance to the beauty and perfection of a plant than a proper system of pruning; and, as a rule, the earlier pruning is performed, the more satisfactory are the results. It is for this reason that it is necessary, throughout the growing season, to “stop,” or take off, the extreme point of strong vigorous shoots, in order that the symmetry and proportion of the plants may not be destroyed by their growing at random, and robbing the weaker shoots: the earlier such shoots are stopped, the sooner is the current of sap diverted into other channels, and the evil arrested. Refer to what is said at p. 209 about cutting down large plants, which may still be done if desirable.

Propagation, in all its various forms, may be prosecuted assiduously.

Chrysanthemums, for autumn flowering, when they are growing freely, and are considerably advanced, should be placed thinly in a situation (out of doors) where they will have free light and air; liquid manure will be beneficial to keep them strong and vigorous, but they are better not placed in larger pots yet. One of the best means of getting *dwarf and strong* plants, is to let them grow tall, and keep them in small pots till the middle of August; then pot them into pots a size or two larger, and coil the stems beneath the soil, leaving out from one to two feet of the top; they will coil readily enough if they are allowed to wither a little before it is attempted, and will soon revive on the application of water.

Melocacti, where they have been grown for a time in moist heat, must be brought to their ordinary green-house treatment, keeping them moderately dry, and exposing them to the temperature of a well-ventilated green-house, in order to ripen and mature their growth. Where any of them are in bloom they may be kept rather closer.

Bulbs.—Any of these which are approaching maturity in their growth, must have their natural predisposition assisted, by giving them treatment suited to bring them to their resting state: this treatment consists mainly, in gradually diminishing the supplies of water. Those that are at rest must be kept dry, in a cool place.

Winter Plants.—Every attention should be given to the plants intended for blooming through the winter, to get them well grown and prepared before the season is too far advanced; they may be grown best for the summer in cool pits: on no account allow them to waste their energies in producing flowers now. *Heliotropes* are among the greatest favourites for this purpose, on account of their odour. *Thunbergias*, *Fuchsias*, shrubby *Calceolarias*, scarlet *Geraniums*, *Salvias*, *Coronillas*, &c., are some of those which are suited for this purpose.

Tetranema mexicana, is a pretty little plant for autumn-flowering; they should be prepared now, by potting the strong plants, into five-inch pots, in soil composed of three-parts sandy peat, mixed with loam, and may be kept, during the summer, in a light, airy place, in the green-house.

Cyclamens.—Young seedling plants, or, indeed, any others, will be benefited by being planted out in a sheltered place, in a bed of peat earth, and loam; they may be taken up in September, and potted for flowering through the winter and spring.

Removing the Plants.—The whole of the plants should be set out of doors during this month, in appropriate situations; that is, the tenderest in a sheltered place, and the hardier ones anywhere that may be convenient. *Succulents*, small plants, and plants impatient of wet, must be sheltered from heavy rains.

Soils.—Now is a good time, when the weather is dry, to get in a supply of soils for potting, especially the two standard ingredients in compost—loam and peat-earth. The top spit should be taken with the turf on, with three or four inches thick of soil; and this should be taken, while dry, to the compost-yard, and stacked up closely, the turfy side being undermost. When the soil is required for use, the heap should be chopped down evenly; it should not be sifted, but chopped, or broken fine. Other materials, such as leaf-earth, manure, &c. should be placed in compact heaps when dry, on ground sufficiently high to prevent rain-water from running under them.

HEATH-HOUSE. — *Temperature, &c.* — During this month and the next, the directions given at p. 209, may be followed, as regards the temperature and ventilation of the house. The plants want more attention than ever paid to watering them, as, if they are allowed to get dry, they will droop, and it is probable that they will not recover. Many a fine plant is lost for want of water; and, as too much is injurious, it is important to pay very strict attention to having them properly supplied. The contrivance mentioned at p. 229, for examining the roots of plants in pots, will be

very useful to those who are not familiar with these matters.

Ericas.—The hardiest varieties, which have been for some time in the pits and frames, or under temporary shelter, may now be set out of doors for two or three months, in a situation where they will be exposed to free air, but protected from rough winds. It is best to set them on the north side of some low shade, that will break the sun from their pots, but not obstruct it from reaching the plants. This is necessary from the very fine nature of the roots, which soon become injured when the sun acts directly on the sides of the pots: to avoid this, a plan is sometimes adopted—and it is a very neat and successful one—of setting the pots among a layer of moss, thick enough to reach as high as the pots; and this, being kept damp, will always preserve the roots from the injury referred to. Potting may still be prosecuted with any plants, large or small, that require it: do it very carefully, and be sure not to omit thorough drainage, nor to forget to use the soil quite in a rough open condition; if it is sifted at all, pass it through the sieve, so as to separate and reject the finer particles, rather than to use them either entirely or principally. To keep the plants of neat form, as they ought to be, the stopping of the free-growing vigorous shoots before they are grown too long is quite indispensable throughout the season of growth. The plants that are kept in the house must be shaded in clear bright weather; they do better in low cool pits, made on the principle of that given at p. 4. Manure water may be given to the plants occasionally—say once a week; use it in a clear state, and considerably diluted.

New Holland, Cape, and other hard-wooded plants, kept in company with the *Heaths*, require precisely similar treatment; when the weather becomes very hot, all these fine-rooted plants do better when placed in cool airy pits.

CAMELLIA-HOUSE. — *Camellias.*—The atmosphere of this house must still be kept in a growing condition, for the benefit of the late plants, which require to have the treatment already detailed, closely followed up with them as they advance in growth. The earlier plants, and all that are so far advanced as to have made their growth, (which is to be observed by the young shoots ceasing to elongate, and becoming gradually firmer and more durable in their texture,) and formed their flower buds, must be then removed to a cooler and more airy house, in order to arrest their development, and divert the energies of the plant more towards maturing the parts already formed, than to the formation of new parts. All through these stages of growth, liquid manure, clear and diluted, may be given them every

alternate watering. Very close attention to watering is indispensable, if any blossom is expected. Shade the growing plants during bright sunshine.

Azaleas.—These will now be going out of bloom, and making new growth, and at this stage should be properly attended in getting a shift according to their requirements. They are to be potted exactly in the same way as recommended for Heaths, but they should get the same treatment as growing Camellias; and, instead of being brought entirely to a state of repose, as is desirable in the case of Camellias, these are better if kept growing—though very steadily, indeed—throughout the autumn, to prevent their foliage from falling. The Horticultural Society's collector has made some good additions to this class of plants.

Rhododendrons.—These may be managed precisely as recommended for Camellias, except that they require peaty soil.

Daphnes.—Pot these, and grow them on freely for flowering through the winter and spring. Prepare a good supply of the sweet little *D. Cneorum* for the winter.

Neriums.—The large plants of Oleanders will require repotting, and must be grown on strongly, in a moist growing heat, for some time, to get them to flower well: take off cuttings of the tops of the shoots likely to flower, and root them in phials, or in small pots; they make neat plants.

Oranges, &c.—Attend to the shifting of these, if it has not been done; give them manure water occasionally: soot water, and lime water, in a clear state, are also beneficial: give one or other of these every other watering, alternating with clear water.

PELARGONIUM-HOUSE.—Here the house must be kept cool, and well aired and shaded, to keep the plants in perfection for as long a period as possible. So that there are no draughts of cold air, which are always hurtful, the circulation and interchange of air cannot be too unlimited. Watering is a very essential operation: the plants must by no means be suffered to get dry, especially those in bloom: a little very weak clear manure water may sometimes be used advantageously, but not too often.

Pelargoniums.—For late flowering, a quantity of the smaller of last year's plants should be kept continually stopped, so as to make them branch out, but to prevent them from flowering. These plants are better placed in some very cool place, such as on the north side of a high wall, where they may be kept cool and moist, and not get any sun. The earliest of this year's cuttings must be shifted and grown on, for a similar purpose, namely, to flower late in the season: put in more cuttings to succeed them; free-flowering vari-

eties only should be selected. Those which were cut down for late flowering will probably require repotting, and if so, let it be done: all these may get a little weak manure water once a week. Prepare a good stock of young plants for the winter: *Alba Multiflora*, *Napier*, and *Grace Darling*, are good varieties; and Mr. Beck, of Isleworth, has also raised some good kinds for this purpose.

Cinerarias.—Take off more of the suckers, and pot on for winter flowering. Plant out some of the plants in a warm and sheltered place, in rich soil, to furnish suckers for a main supply of plants. Place those raised last month into larger pots, as soon as they are enough advanced. Pot off the seedling plants, and grow them on freely: the cold frames are the best places for growing these plants at this season.

Fuchsias.—Water the plants rather freely with weak clear manure water: pot them as they require, according to the size they are required to attain.

Calceolarias.—Keep them well watered while they are in flower; and when these are over, cut off the tops of the blooming stems, and set them in a cool frame, to throw out young shoots for propagation: look after this, so as to get a good stock of young plants. These plants strike better late in the summer than they do early; it is of no use taking any of the shoots that are likely to throw flowers, as these rarely take root kindly; it is better to wait till blooming is altogether past.

THE PLANT STOVE.

Temperature, &c.—A strong moist heat must still be kept up, in order that the plants may grow without interruption, which is very essential to their perfection. This will not now require any (or very little, according to the season) artificial heat, but the house should be closed early in the afternoon, so as to shut in a portion of solar heat, the floors and walls being well damped, to raise moisture in the atmosphere. The atmosphere must be kept very moist, by means of syringing or flooding the paths, two or three times a day, and wetting the walls, and every other surface that can be moistened. A moist atmosphere is the best cure for insects. Give air in good time in the morning, and through the day until the afternoon, if the house is hot enough to require it; and when the air is mild, it may be admitted during the middle of the day as a matter of course.

Watering.—The growing plants require copious and regular supplies of water at the root; and all the stronger kinds will be benefited by a little manure water, if given to them in a clear and diluted state. A few of the earlier tuberous and bulbous-rooted plants,

such as *Achimenes*, *Gesneras*, &c., will probably be past flowering, and nearly matured; they must, in that case, have smaller supplies of water until they are gradually dried off.

Potting.—As in the case of green-house plants, this may be continued, as required, throughout the season of growth.

Pruning.—For the sake of securing neat and well-shaped plants, the free-growing shoots of the plants should be topped, in order to cause them to grow more compact and bushy. Some discrimination is necessary not to remove the tops of the shoots from those plants which flower in that position; but if it is done in an early stage of growth, there will not be much risk.

Clerodendrons.—Shift these into larger pots if they need it, and keep them well watered, and in a good position: being plants that produce large noble-looking leaves, they are much injured in appearance when the leaves become damaged. When any are so far advanced as to be in flower, they will be found to keep longer in perfection, if removed to the green-house; indeed, this is the case with most stove plants.

Eranthemums.—Young plants raised from cuttings in February, and intended for early winter flowering, should receive the final shift now, into five or six-inch pots, so that they may get pot-bound by September: this promotes their flowering. Similar treatment would suit other plants intended for the same purpose, such as *Justicias*, *Aphelandras*, *Euphorbias*, *Poinsettias*, &c. mentioned at p. 56; and *Lankesteria* and *Beloperone*, at p. 161.

Removing the Plants.—The hardier of the plants should be moved to one of the green-houses—that which is kept at the warmest temperature, and this will give room to place the plants at greater distances asunder, which is a matter of importance at this period; for, if they are allowed to become crowded when they are growing freely, they become weakly and drawn, and are not so well prepared for flowering. Some of the tender annuals that will probably be getting too large for the frames, may be moved to the stove, either to remain permanently for flowering, or as preparatory to placing them in the warmest green-house for that purpose: these are much benefited by frequent applications, every alternate watering, of clear diluted manure water.

Propagation may still be carried on, under any of its forms; but seedlings are not so well raised late in the season, as they are then very apt to perish in winter.

ORCHIDACEOUS HOUSE.

We can add nothing with advantage to the general features, as regards temperature, moisture, shading, &c. sketched at pp. 162 and 211.

Exactly the same conditions, in all these respects, require to be maintained, in order to keep up the growth of the plants; for here, as elsewhere, unchecked growth and successful growth are terms nearly or quite synonymous. By unchecked growth, however, it is not meant that the plants are not to be brought to a state of maturity and rest at the proper time, but only that while they are making their seasonal growth it should be uninterrupted.

Ventilation.—The foliage of the plants ought to be dried once in the course of every day, though at other times the atmosphere should be kept moist. The drying of the leaves can only be properly effected by means of proper and judicious ventilation, which is to admit a change of air without allowing a current of cold air to enter. The latter evil may be checked in a variety of ways; close netting, perforated zinc, or wire lattice-work, may be fixed over the openings; or the openings may be so managed, that the air may pass over the hot-water pipes or flues, before it comes in contact with the plants.

Dendrobium.—Those kinds which bloom during the winter and spring, if not already examined and repotted, or re-arranged on blocks or in baskets, as the case may be, should now meet with attention, in order that the newly-formed stems may get well ripened by the end of the growing season: without this they will not flower well.

Oncidium.—Many of these which are very free growers, require to get a good share of moisture from this time until October, in order to keep them in a free growing condition; but it should not be given so as to lodge about the young shoots.

Cattleya.—This is one of the very finest groups of Orchids. They will now be growing freely, and require much less water than many other kinds. They should be placed near the glass, so that they may receive as much light as possible, though the direct rays of the sun must not be allowed to act on them directly.

Laelia.—This genus requires very similar management to the *Cattleyas*.

Aërides and *Saccolabium*, where they are growing freely, should have plenty of sphagnum moss tied on the blocks, or placed in the baskets about their roots. These require a warm situation.

Resting.—Any of the plants which have matured their growth, which is indicated by their having ceased to enlarge the size, must have the quantity of moisture diminished, so as to bring them gradually to a state of rest.

Watering.—Some difference must be observed in watering the plants in the hot and in the cooler-house; in the former, there is little risk of injuring the plants by giving them too

much moisture during the growing season, provided the young shoots are not deluged, since the heat of this house will prevent the injury which would accrue in a cooler temperature. In the cool-house, on the other hand, if water in any quantity is allowed to lodge in the base of the leaves of the young shoots, they will rot away, or the leaves will assume a spotted and sickly appearance, and the flower stems will be weakly. This is a very critical period of growth; and, in consequence of our artificial, and often unnatural mode of treatment, many of the young shoots would be likely to be lost. Many plants grow naturally with their leaves downwards, thus preventing the lodging of water at their base: this is not enough attended to in artificial cultivation. The plants that are not in a growing state should be collected together, that they may get less moisture, both directly and indirectly, than those which are growing freely.

FORCING-HOUSE FOR FLOWERS.

By this time the forcing of flowers, strictly speaking, is over; and the structures used for this purpose may be applied to other objects. Still if any plants requiring nearly the treatment given in a stove, such as *Achimenes*, *Gloxinias*, &c., are yet retained here, continue to encourage their development by every appliance available; such as maintaining a regular, moist, sweet atmosphere about them, training the plants regularly, and keeping under all insects.

Crassula falcata should also be continued in sufficient heat to enable it to attain the largest possible growth; until which time, it should be liberally supplied with moisture, so long as the roots do not get damaged by it.

Pinks, *Picotees*, &c.—Bed out all plants of this description as soon as they are well rooted. Chose a warm but not too much sheltered spot, and well dress the ground with rotten manure or leaf-mould, giving it a good digging, so as to leave it as light as possible. Then put out the young plants, allowing about a square foot of ground to each. If the weather is at all dry, water the plants and shade them till they make a fresh start; keep down weeds, and occasionally stir the mould well among the plants.

Pelargoniums.—As these plants go out of bloom and begin to harden their wood, cut them in close, and keep them dry until they begin to push fresh buds. When such buds attain a length of half an inch or a little more, the plants should be shaken out of the pots in which they were grown the previous season, and the roots should be very considerably shortened, so that the plants may be repotted in small pots, in a free sandy soil, with very little manure in it. Place

them in a pit, where they may be kept shaded until they begin to grow strongly; when the shoots should be stopped, and so regulated as to form handsome compact heads.

Chinese Roses.—Pot off all cuttings of *Roses* of this class as soon as they are well rooted, and grow them in pits kept pretty close until they attain a sufficient size for use; when they may be hardened to endure the open air until wanted for forcing.

After Treatment.—Attend to the watering, weeding, and regulating of all the hardy shrubs which are potted up for forcing. One point should always be attended to in managing all forced plants, especially woody ones. It is to keep them so regulated as to be enabled to introduce the same plants to the house as nearly at the same time, in each season, as possible; or at least, in the same order. Plants so treated become in some degree accelerated, so as to require less excitement to induce them to commence their growth after a few years, than plants which are forced for the first time.

PITS AND FRAMES.

These structures will now be fully occupied: all the most delicate of green-house plants, removed to a cooler position from those structures, will be here accommodated while they form and mature a perfect growth, and prepare themselves for their next flowering season. Various plants will be preparing for winter flowering; and in others again, propagation will be going on vigorously, to furnish young and healthy plants of various kinds that may be required.

Tender Annuals.—These must be removed to a stove, or warm green-house, as they grow too large for the frames; but they always do best to be kept in the latter as long as possible. Pot them frequently into rich soil; but, especially as they get large this must be done very carefully, so that the roots are not injured thereby. Balsams may be flowered very well in eleven-inch pots; but larger ones will produce larger plants. Cockscombs and Globe Amaranths do very well in eight-inch ones. Browallias, also, do well in this size. These are some of the best of this class of plants; and they are very useful for ornamenting the green-houses and other situations, during the time the other plants are set out for the summer.

Alpines.—Keep these in a cool shaded place with a north aspect, and keep them well moistened. It is a very good plan to plunge the pots in moss, and to keep this damp, as it keeps the roots in an evenly moistened and cool state.

Half-hardy Annuals.—A few of the very best sorts, or those most admired, if sown

during this month are sure to come in useful, to follow others previously sown.

Half-hardy Bedding Plants.—These should now be planted out without hesitation. They ought to be finally inured to the open air previously to this operation.

Green-house Plants.—Any of these which are removed to the pits, should get abundance of air night and day; and they must have regular supplies of water. Pot any that may require it. Give them as much room as possible, that they may not grow weakly or drawn.

Pinks.—The early kinds of pinks for forcing, such as Anna Boleyn, Early May, &c., and the forcing Carnations and Cloves, should be propagated extensively, from pipings planted in the ordinary way. When they are rooted, plant them out in good ground for the season, and take them up carefully and pot them, in the autumn.

Hydrangeas.—Shift the young plants raised from the tops of the shoots, for blooming in a dwarf state next year; five-inch pots will be large enough: water them freely, and set them where they will get all the sun, in order to plump up and ripen their terminal buds, without pushing at all to growth.

Seedlings.—Pot off seedling plants singly into small pots, and as they grow shift them into larger ones according to their nature.

Propagation.—Propagate by cuttings any kind of green-house plant, which it is desirable to increase. If any plants of particular kinds of bedding plants are likely to be wanted towards the end of the season, for filling out any of the beds after the annuals have past blooming, they had better be prepared in readiness. Cuttings of such plants rooted now, will have made strong plants by the period referred to. As the object in using them will be to produce immediate effect, they will repay any such pains taken with them, as repotting, &c., in order to advance them.

WINDOW GARDENING.

When the windows and balconies are filled with a selection of plants, according to taste, and these are potted into moderately large pots, sufficient to last them through the growing season; they will require little other attention besides watering, which must be very regularly and constantly done. Plants in this situation, from the position they occupy, are extremely liable to suffer from drought, if there is the least neglect in administering their supply of water. This applies equally to all the kinds of plants cultivated in these situations. In order to protect the roots of the plants from injury, in consequence of the powerful rays of the sun

striking directly on the sides of the pots, often very thin, and forming a mere shell around the roots, it is advantageous to set the pots containing the plants within others just large enough to contain them: the double sides of the pots, together with the small open cavity all around between the two, prevent the evil to a very great extent; and it may be still further prevented by choosing the exterior pot still larger, and filling the cavity between the two with moss, which is to be kept damped. If this plan is objected to, it would perhaps be possible to form a bed of moss on the window-ledge in which the pots could be plunged, the moss being kept damp. A very pretty selection for a window consists of a scarlet Pelargonium, a yellow shrubby Calceolaria, and one of the deep-coloured small blue Lobelias: a globe Fuchsia is also a beautiful plant for the situation. It is a very prevailing evil to set such plants too thick; they should never touch.

ROSE GARDEN.

Roses are now advancing for bloom, and many of them, more particularly the perpetuals, come up with buds very close together. Some varieties have a crown bloom, and two side ones, which are so close to it, that the middle, or principal one, cannot flower properly, because the side buds literally press it out of form. These side ones should be taken off while quite small; and in all other cases, wherever they are too close, the lesser buds, that actually have not room to bloom well, should be removed, to make way for them. If, however, the rose-tree is to stand for the sake of its quantity of flowers, it is the best way to cast out the centre one, and make room for the two. All this month the treatment of last month should be repeated, and in all particulars industriously followed up throughout. You should also go into Rose gardens and make memoranda of the sorts you wish to buy, and mark your plants, because next month you may go and cut off some of the shoots to bud with; but, to enable you to do this, you must pay for them when you mark them, otherwise they are not your property, and you cannot claim them unless the nurseryman pleases to consider them bought and booked. The budding, in some seasons, may be done this month, but July, and even towards the end of it, is more likely to be the proper season: this, however, is determined by the state of the stock. If, on cutting a slit in the bark, you can lift each side freely from the wood, the stock is ready to receive the buds, and the operation is simple. You, with a very sharp knife, cut a slit in the bark an inch long on the upper side of a branch—in the strongest branch near the top of the stock—and within

half an inch of the stem itself; half way in the slit make a cross, cut just through the bark and not into the wood; with a thin piece of ivory, or some other hard substance always attached to the budding knife, raise this bark from the wood, enough to enable you to tuck any thing under it; then take the branch from which you wish to bud, and with your budding knife take off about half an inch of the bark and wood with a leaf on it. This ought to be taken off so thin as to take hardly any wood with it. This has to be tucked into the cut you have made in the stock, so that the leaf shall come where the cross is, and the bark of the stock cover it. Then with some coarse worsted, or soft bass matting made into narrow strips and soaked in water, tie the bark down upon the bud, by first laying the middle of it across the slit at the end nearest the stock, and then crossing it underneath; then bringing both ends to cross on the upper part nearer the bud, but leaving no vacancy between the first and second crossing; and so, alternately crossing under and above the the branch, bringing it up to the leaf, and the next time you cross it on the top, cross it on the other side of the leaf, and continue crossing till you cover all the slit, leaving the leaf sticking out, and at the last crossing tie it. Thus you confine the bud which is at the base of the leaf, and it will unite and form a branch; but, after it is tied, a bit of wet moss should be put loosely round it, and be tied only tight enough to prevent its coming off; this is to prevent the sun from drying up the juice of the bud and plant, before the union takes place; and therefore, if the weather be at all parching, the moss will require frequent watering to keep it damp, which is all that is required. The branch on which this is done should be shortened considerably, that the moisture may go to the bud; but several joints with the foliage must be left beyond the bud to draw the sap past it, and promote the union. The moss, it must be remembered, being only to counteract the heat of the sun, and the parching wind, must be very loose and open, and also tied on very loosely, with just one bit of bass matting; and if the Roses are in a shady situation, and the weather is cloudy and not windy, there will not be any moss required. It matters not what kind of Rose it is that is budded, so that the bark will easily raise up from the wood of the stock. When the piece of branch is cut from the tree to be used for the bud, however thin it may be cut, it brings away a little of the wood with it. It was the practice once, and many old gardeners still observe it, to lift out the piece of wood from the bark of the bud; but this practice was useless, and often wrong, for the root, as it were, of the bud would often come away

with the piece of wood, and, although the bark would unite with the stock, and the bud keep green, it would not grow, because the very germ was missing; besides which, if the stock is in good order for budding by reason of the bark rising easily, the Rose itself that is to be budded into it, is often not in such good order for separating. It is, therefore, far better to thin the part with the bud on, so as not to take too much room in the stock; it is better to leave the wood in, as it forms no obstacle to the union. If the stock has three or four branches all near the top, or even two or three, each branch may be budded in a similar manner, because a head is the sooner formed, and each one may have a different sort of Rose, if that be wished; in such case a contrast of colours is desirable; white, pink, crimson, and dark; but in these cases take care to have Roses that bloom at the same time, and of a similar habit of growth, otherwise one will get the start of the other, and they will never make a well-formed tree. We have given this budding operation in June, because, in some seasons, it can be commenced with early Roses, and free-growing stocks; and because, through friends, buds can be got at one time when they could not be got at another. Budding may be successfully practised on China Rose stocks, and it is a pleasing operation to put in buds of various coloured Roses on a well-established China Rose-tree, on the front of a house, or on a wall. All you have to do in this instance is to select Roses of the China, Noisette, or at least smooth wooded kinds, as they bud freely on China stocks. The branches on which these buds should be placed should be strong, and should be worked pretty close to the old wood, or perhaps we ought to say matured wood; and the shoot should be shortened to within a few eyes of the bud, to prevent too much nourishment from being lost on the branch itself instead of the bud. Smith's Yellow Noisette, and most of the Roses of that kind of growth, flourish very much upon a well-established China, and a good large one, covering a considerable space, might be made a very pretty and diversified object. Care should be taken to remove any vigorous branches of the China from the immediate vicinity of the buds, as they would greatly check the growth of the new sorts, and the China Rose will always have a tendency to get the upper hand. The stocks intended for budding should have all but the two, three, or four branches intended to remain, rubbed off, and all the suckers removed, that the entire strength may be thrown into those branches intended for the operation; and the effort of the stem to grow anywhere should be, from the first, checked, so that all the eyes, the entire length, except the top ones, may be removed.

It is only the constantly rubbing off all the buds but those that are wanted, that makes the stems of standard Roses so clear and free from shoots; but there will always be a tendency to break out, either at the root or some other part, and nothing but removing them young can prevent them from greatly retarding the growth of the buds. The Roses that have been forced, and are getting out of bloom, or have done flowering altogether, should be plunged in the open ground, but not be watered much, because you rather want to mature the wood than to increase it. Roses blooming in pots should have great care as to the shading, and should be liberally watered. Seedlings that are large enough should be potted off; those which have filled their pots should be shifted into larger, or be planted out. Syringe those that are out of doors, to clear them from green fly, and fumigate those under cover for the same purpose; and whenever you find among the seedlings any promising ones worth the trouble, bud them on strong briars, to hasten the bloom a season; they can but be thrown away if they disappoint you. But only such as indicate novelty by their habit and foliage are worth the trouble; for instance, anything that differs materially from what we already possess—any Moss Roses, or any that possess real novelty in the stems, leaves, or manner of growth. Weed the beds of seedling roses, and stir the earth between them, and be careful of any that, on blooming, seem better than we possess. At all times remove from old plants or seedlings any superfluous branches; never let the shoots crowd each other, and where any rose tree has very vigorous branches, they may be topped, if you desire to encourage side shoots, or prevent the strongest from injuring the growth of the weakest. Look well to the former month's directions at all times, because there is a good deal that applies to all times and seasons. If you get sorts to bud from before you can use them, keep them, like cuttings, in wet sand, with a glass over them.

FLOWER GARDEN.

Anemones, when planted in spring, will now be advancing to a blooming state, and should be freely watered *between*—not over—the plants, and shaded from the sun.

Annuals.—Thin those sown out in the borders, where they are to bloom, for they do not flower well if left too thick. Plant out the half hardy ones, raised in frames or on beds, for transplanting. It is as well to sow a few more of some of the best, as the seed is not very expensive, and sometimes the plants prove very valuable, for keeping up a succession of bloom.

Auriculas.—These are better not potted yet,

as the change sets them growing, and they bloom in the autumn, which spoils the bloom at the proper season. Examine the drainage, and pick off dead leaves. Seedling plants should be transplanted, or potted off singly.

Bedding plants.—Much of the beauty of flower beds depends on keeping the plants close to the ground, and inducing them to grow into a compact form. Small wooden pegs are often used to fasten down the shoots, but a neater plan is to take small strips of matting, and passing them over the shoot, press both ends together in the soil; this holds them firmly down, and is simpler and neater than pegs, and more easily done. Stop all the strongest of the shoots pretty freely for a month or so forward.

Biennials.—Sow on poor ground, and transplant them also to poor soil, to stand the winter. Those previously sown may be pricked out.

Bulbs that have done blooming, should be taken up, and laid in the reserve ground till their leaves turn yellow, when they may be dried. If they are allowed to stand till the leaves get yellow, they may be dried at once. Those which may thus be treated are the Hyacinth, Crocus, Snowdrop, Ranunculus (early), Tulip (early), Anemones (early), Narcissus, &c.

Carnations.—Use every means to keep the vermin—earwigs and wireworms—from these plants: earwigs must be trapped and taken by any kind of hollow trap, which they enter for shelter: wireworms must be looked for at the root, and destroyed, if a plant is found to fail; this is the only way of keeping them from attacking other plants. Tie a slip of matting or worsted round the buds when they are ready to burst. In dry weather they need some water, but not frequently. Tie up the flower stems, but it must be done loosely.

Chrysanthemums.—Give these repeated shifts, so as to get them strong before blooming time comes. Stop the shoots occasionally.

Cut down the stems of any of the early flowering plants that are gone out of bloom, and remove them; this should be done before they become unsightly.

Dahlias.—Get these planted out as speedily as possible. The stakes should be put down when they are planted: be careful not to tie them too tight, as the stems swell very rapidly, and would be injured by it.

Guernsey Lilies.—Take up the bulbs of these, and separate them if necessary, and replant them at once; they succeed well on a warm border, in light soil. Transplant every second year.

Lawns.—The beauty of these depends on following up with untiring perseverance the operation of mowing: mowing should always

be done before the grass has had time to grow long ; it is letting the grass grow away for a time till it gets long, and then cutting it close, that makes a lawn look so yellow and sickly as we sometimes see it ; the reverse of this, secures a fine, green, healthy sward.

Pansies.—Put in a succession of cuttings for a supply of young plants, without which good blooms cannot be secured. The young plants should be planted in good loamy soil, in a cool situation. Remove the blooms as they fade, except in the case of those required for seed.

Perennials.—Sow these on poor soil, and when large enough transplant them to stand through the winter, before they are finally planted out ; choose poor soil for them, so that they do not get too gross. The earlier sown ones may be pricked out.

Picotees.—Protect the flowers from bursting, by tying a slip of matting or worsted around the buds, just before they open : keep the earwigs from them if possible, and water if the weather is dry. Tie up the flower stems loosely.

Pinks.—If the supernumerary stems and buds were not removed as directed last month, do it early in this, in order to throw strength into the plants. If the weather is dry, water them to enable them to open their flowers freely. Towards the end of the month propagate them by pipings : do not shorten the leaves of the pipings. Tie the buds neatly round with a slip of worsted or matting.

Ranunculuses.—Such as were planted late, require watering, and shading from the sun, in the same way as Anemones.

Roses.—Prepare for budding these, by removing unnecessary branches from the stocks, and be on the look out for a supply of buds. Next month is soon enough for the operation.

Routine matters, such as hoeing, weeding, watering, clipping, sweeping, &c., must never be lost sight of.

Seeds.—By all means preserve seeds of any very fine blooms or fine varieties of any flowering plants which you may possess, whether they be annual or perennial, and attend to the rearing of them according to their nature. This is the way to encourage new varieties. Except in these cases, let all seed-pods be removed as soon as the flower is past, as it very much improves the after flowering.

Stake all tall growing and other flowers that require support, before they are blown on one side by the wind.

Sternbergia lutea, '*Colchicum*, '*Cyclamens*, and other autumnal flowering bulbs, should be removed and thinned, if necessary, and replanted ; they do best when not often disturbed.

Tulips.—Remove all the coverings as the plants go out of flower, and break off the pods

of seed soon after the petals fall. When the leaves turn brown, they may be taken up.

Wallflowers.—Propagate the double ones very extensively by cuttings. If a good supply of double ones can be obtained, there will be little need for sowing the single ones.

Water all newly planted flowers pretty freely if the weather is dry, and such other plants too as require it.

KITCHEN GARDEN.

KEEP the hoe going regularly, and in every place, particularly after heavy rains, and when the ground is sufficiently dry ; this, while it adds to the purifying of the soil, also enriches it, and invigorates the crops, at the same time giving no quarter to insects nor their broods.

Artichokes, Jerusalem.—Where they are seen to be rather thick, it will be advantageous to thin well, removing all the weakest shoots. The practice of topping them is proved to be quite unprofitable.

Asparagus.—Give two or three dressings of salt, either by sowing it lightly on the beds and watering afterwards, or by watering them with salt water ; the best time for the operation is in showery weather. Discontinue the cutting of the young shoots as early as possible, for in proportion as they are cut now, so will be the strength of the plants for next season. If the making of new beds has been attended to, and there is a good stock, the old beds may be cut from as long as the produce is worth cutting ; the ground should be trenched afterwards, and the following crop is sure to do well.

Beans.—Attend to the earthing up, and topping of the former plantings. Another planting may be made of the early sorts. It has been found that by breaking or cutting over the early crops, (from which only a few have been gathered,) to within a few inches of the soil, they will break freely, and bear better than late plantings.

Beet.—Thin out to a foot apart, and give a good hoeing afterwards if not already done.

Borecole.—Full plantings can still be made as the vacancies appear, or they may be planted between rows of peas if ground is scarce.

Brocoli.—Towards the middle of the month the chief plantings may be made. Where the young plants were pricked out, as before recommended, they should be lifted with balls, and planted with a trowel, giving width according to the richness of the ground, and the kinds planted ; two feet each way may be considered the average. Do not omit to have another sowing near the end of the month, if the winter is mild it will be found most serviceable. Grange's Early, and the Walcheren will be found well adapted for this sowing.

Have also some of the Russian, which comes in well in spring, and can be planted at eighteen inches or a less distance apart.

Brussels Sprouts.—Make a good planting of this useful vegetable in an open part of the garden in rich soil.

Cabbages.—Make another sowing; transplant the spring sown crops sixteen inches asunder; hoe and earth up previous plantings. Clear off the leaves of those which are cut and are to be preserved for sprouts.

Carrots.—Put in a sowing of the Early Horn to draw when young, and in ease the main crops should fail, which should now be finally thinned out.

Cardoons.—Thin to one foot apart, and treat as celery.

Cauliflowers.—Those sown last month should be pricked out; the advanced crops may be watered with clear liquid manure with great benefit. A small sowing could yet be put in, and will come in about November. Clear the ground as the produce is cut.

Celery.—Continue to prick out the plants as recommended, and have prepared, if not already done, trenches for the two rows, and also for the five rows or more in the trench. If the trench be six feet or so, plant in cross lines, fifteen inches apart. This plan is only commendable when ground is scarce, and a large stock is required; two rows in a trench, with a foot between the plants, is preferable. Dig well-rotted dung in the bottom, and have the trench about nine inches below the natural level when finished. The practice of divesting the young plants of their leaves is very objectionable: lift the plants with a ball of earth, and select them as nearly of a size as can be got. They are fond of moisture; water copiously with liquid manure. Near the end of the month give a slight earthing up, taking a dry day for the work, and breaking the soil well at first, drawing the mould about the plant with the hand, then using the spade.

Celeriac.—This turnip-rooted celery is treated like the preceding, excepting it requires no trench, and one earthing-up is sufficient. It is used in the kitchen for soups.

Chicory, or Succory. Sow in drills a foot apart, and thin out to four inches; give it a rich piece of ground. There is a tuberous rooted variety, which when dried can be employed as a substitute for coffee.

Endive.—Sow now for a main crop; the green curled is the best. Let the seeds be scattered thinly. Of those which were sown last month, plant out a few, giving them a foot apart each way; it facilitates bleaching to plant them in drills. Do not cut the leaves when planting as some do. The chief planting reserve for next month.

Herbs.—Cut and lay them in a dry place

just as they are coming into flower; when a little dried, tie them in small bundles, and hang them up in a shed or loft where there is no moisture.

Kidney or French Beans.—Sow every fortnight, of the sorts before recommended; the black speckled, and scarlet runner may be added; drop them in three inches apart.

Leeks.—Transplant still, choosing a rich and open place for them, in the mode, before treated of.

Lettuce may be planted on celery ridges, where it will do well; any spare corner should also be filled.

Mushrooms.—Keep the atmosphere about the beds always moist; have the thermometer about 60°, some recommend 70°, when the beds, are in full bearing. Make successional beds according to the demand. Spawn the ridged and framed Cucumber beds, also the Melon pits, when the violent heat is over: most excellent crops are so raised.

Mustard and Cress.—Sow every ten days in a shaded place, or throw a mat over it if in the open ground.

Onions.—Thin out these, taking care always to gather those for present use which have the least bulb; hoe deeply, and take up those now ripe which have stood all the winter.

Parsley.—Sow again: there can scarcely be too much for the winter, for it is always much in demand. The transplanting of it is said to make it more curled and finer. It is a good plan, when a fine sort appears, to preserve it, and save the seed.

Parsnips.—Repeat the thinning, leaving the plants finally at nine inches apart: give deep hoeings.

Peas.—Still make successional sowings, on a warm spot, and of the early sorts.

Potatoes.—Have these well hoed and earthed up; remove all blooms as they make their appearance.

Pumpkins.—See that they are planted out in a sheltered situation; peg down and regulate the branches.

Radishes, and most other Salads, should be sown every alternate week, or oftener, if the weather is dry and warm.

Rampion.—Sow as Endive; thin, and keep clear of weeds.

Rhubarb.—As soon as the Gooseberries are ready for tarts, stop using the Rhubarb, as the longer it is gathered now, the weaker it becomes for the next year.

Salads.—Sow most sorts every ten days.

Salsify and Scorzonera.—Thin the plants with the hoe, which is the most expeditious method.

Savoys.—A full planting may still be made, as before noticed.

Spinach.—Make another sowing, unless the

New Zealand sort is in use, which will last until August.

Tomatoes.—Plant out in the warmest situations, against a wall, to which they must be nailed: stop all laterals as they appear.

Turnips.—Make two sowings during the month.

Water-Cress.—Plant in any clear running stream; it will also do in places where there is little current.

CUCUMBER AND MELON FRAMES.

Cucumbers.—Keep up the heat regularly, by means of linings of fresh dung, but they will not need to be so powerful as hitherto. The plants must be duly watered, but they must not have too much, especially if the heat is rather low, as this produces canker. They should have liquid manure occasionally when in bearing. They must also have tolerably free ventilation during the day, and some even at night. The plants must be regularly thinned, as already recommended. Plant some cuttings, of any desirable kind; and be on the look out for the Syon House or Kenyon variety for winter growth. The ridge Cucumbers should be planted out this month.

Melons.—The late or successional crops may be planted out as the frames get cleared out of other things. For very late crops, an early variety is best, as it comes to perfection in the least possible space of time. Very late Melons are tasteless. Do not water the plants over head, or it will cause the young fruit to become abortive: attend to thinning and regulating the shoots, as already detailed. Where the plants were placed out on hills, fill in the whole of the soil, give it moderate watering and treading, and it will seldom require any more: it is sometimes found to be advantageous, especially in cool dull summers, to cover the surface with slates or tiles, which keep the fruit from the damp surface of the soil, and assist in maturing it, by absorbing the heat of the sun.

FRUIT-GARDEN.

GIVE the strictest attention to keeping this department clean in all its parts; water the newly planted trees, by forming a basin around the plants; see that all the pruning and nailing is attended to in due time.

Almonds.—Have the wood and fruit finally thinned, preserving all the right placed shoots, and tacking in the same. Where these are laid in about six inches apart, it will be found quite thick enough.

Apples.—In many places the severe frosts have done the work of thinning, almost too severely; still, where they were very late, they may have set thickly, and it will be found that the quality will be much improved by a

judicious thinning. Nail in and regulate the shoots of those on walls; break over the breastwood to about one-third of its length, or so long as not to cause the back eyes to break: the same with espaliers.

Apricots.—Finally thin the fruit to about one to every foot; but they may be left thicker or thinner, according to the strength of the tree. Tack neatly in all the shoots that are well placed; they will be thick enough if about six inches apart: unnailed and rectify the position of any shoot that may be pressing the fruit; this requires more attention than is generally given to it.

Budding.—Nearly all the stone fruits succeed best by this mode of propagation, which may be commenced this month. Plum stocks are generally preferred, but they will do well on stocks of their own kind. Choose a smooth place, at any height required, on the north side of the stock if possible, as not being exposed to the sun. With the budding-knife, make a cut across the back, or a "transverse incision" into the wood, and from the centre of this cut draw another perpendicularly downwards, about an inch in length; then take the selected bud, removing with bark attached, in the form of a shield, and of nearly the same length as the downward slit in the stock, taking care that only part of the leaf of the bud is removed; when stripping out the wood from the bark of the bud, see that the bud is left. Then gently, with the bone handle of the knife, raise the bark of the stock, and insert the bud under it. The upper end of the shield is to be cut off, making it to fit exactly into the incision first made; tie it in neatly with moist matting, observing to keep the bud open and free. This operation is seldom performed until the latter end of July; but, from the advanced state of the season, it will probably require earlier attention. Budding is an excellent way of extending quickly any good sorts.

Cherries.—Protect from birds by netting, which must be kept out from the fruit by forked sticks, placed against the wall: be particular in mending any rents in the netting.

Currants.—All superfluous wood may be removed, so as to admit the light and air for the flavouring of the fruit, and ripening of the wood.

Figs.—Stop every shoot, at, from five to eight inches long, so as to have close jointed and fruitful wood.

Gooseberries.—Keep the centre of the bushes open by removing all the young wood, which is never required there; the side shoots may also be moderately thinned. In using this fruit for tarts, avoid the common practice of clearing the bushes, but rather divest them only of half their load. Where in-

fested with vermin, dash clear lime water over them.

Grafts.—Remove the clay from the grafts, and slacken the ligatures: be particular in training in the young shoots; and in standards tie them to stakes put in for that purpose. Rub off all the shoots issuing below the grafts; this applies also, as a principle, to the grafting and budding of last year.

Nectarines.—Keep nailing and thinning the wood: in young trees the stronger shoots may be stopped, so as to increase the strength of the others. Attend to raising and lowering the branches according to their strength, as before recommended: thin the fruit to ten inches apart, if the tree is in good condition. The wood if laid in at five inches will be sufficiently thick; if there is more than this, thin it. Should green fly or red spider still appear, apply the syringe or engine, with soap and soot water (clear), and with some force, for the latter; and fumigate or syringe with tobacco water for the former.

Peaches.—The treatment for nectarines is applicable here. Liquid manure may be given now with benefit to all: for transplanted trees, make a wide basin around them: all waterings should be thorough ones, and afterwards the dry soil should be again returned; this prevents evaporation, and keeps the soil from cracking. When frost has destroyed the crops, a less rich soil will do; and the chief end in view must be the proper ripening of the wood: thin it well, and entirely remove ill-placed shoots.

Pears.—See that the breast wood, especially of the finer sorts, is kept in, so as to give the tree all the benefit of light and heat, thus concentrating the strength of the tree in the fruit and buds as much as possible.

Strawberries.—The late sorts should be watered and mulched: withhold, as far as possible, all moisture from those which are ripening. Now is the best time to prepare plants for forcing, by getting the runners rooted, thus:—stop the runner beyond the plant; place the plant in a three-inch pot, using rich turfy loam, than which, if mixed with superphosphate of lime, nothing better can be used throughout; give occasional waterings; and if well firmed with a peg or a stone, they will be ready to repot, in a fortnight or three weeks. Protect, by netting, the ripe and ripening fruit.

Vines.—Thin the wood to as much as will be required for a crop next season: tuck in the shoots; thin the bunches and the berries, as soon as they are well set.

Wasps.—Destroy all the nests of these as soon as possible, by some of the several plans which are adopted for this purpose. Those hanging on trees, &c. cut away and drowned: both should be done late at night.

Those who cultivate fruits will find it worth while to ascertain whether they possess the most desirable kinds; and when this is found not to be the case, improved kinds should be gradually substituted. In most cases this can be more easily and speedily effected by budding or grafting the old trees (if healthy) at the proper season.

HORTICULTURAL SOCIETY.

FIRST EXHIBITION FOR 1846.

THE first of the magnificent flower shows of the Horticultural Society took place in the gardens at Chiswick on May 9th. The day was a fine one, and nearly five thousand visitors were present. We shall only allow ourselves space to notice a few of the leading plants.

Stove Plants.—Mr. Green, of Cheam, had a beautiful *Ixora coccinea*, upwards of five feet high, and well clothed with foliage, on which were twenty large heads of brilliant scarlet flowers, and several smaller heads. A smaller plant of the same kind, from Mr. Clarke, of Muswell Hill, less than two feet high, had, altogether, forty heads of bloom. *Clerodendron Kämpferi*, with its ample leaves and towering panicle of scarlet flowers, was contributed by Mr. Barnes, of Bromley, and by Mr. Robertson, of Ealing; each plant having one stem. *Lantana mutabilis*, from Mr. Catleugh, of Chelsea, formed a pretty bush, two feet high and a yard across, studded with Verbena-like heads of purplish flowers. *Siphocampylos coccineus*, a new plant of last season, (see *Ann. of Hort.* p. 449) was shown by Mr. Robertson, a yard across, and gay with its drooping scarlet flowers; it was also shown by Mr. Epps, of Maidstone, in a smaller state, but equally pretty. Mr. Green had *Achimenes picta*, a yard across, and well flowered. Mr. Beck, of Isleworth, had a very neat small plant of *Achimenes argyrostigma*, (see *Ann. of Hort.* p. 433,) growing in one of his small slate pots, of very neat construction. Mr. Green had a beautiful plant, about two feet high, of a very rare Cactus, called *Epiphyllum Russellianum*, which in habit resembles *E. truncatum*, but in the form and colour of the flowers—bright rose purple—approaches *Disocactus biformis* (see *Ann. of Hort.* p. 177).

Greenhouse Plants.—There were several beautiful plants of *Tropæolum tricolor*. Mr. Stanley, of Sidenp, had one on a curved shield wire trellis, three feet across; Mr. Epps had one on a four feet trellis of this construction; Mr. Hunt, of Bromley, had one on a three feet trellis: all these were closely covered with foliage, and quite thick of scarlet and black flowers. Mr. Robertson had *Acrophyllum venosum*, a round bush, two feet high,

well furnished with its branching feathery spikes of whitish flowers. Mr. Barnes had a most remarkable *Phenocoma prolifera*, a dense thicketty mass, three feet high, and four feet through, studded with deep, crimson, "everlasting" flowers. There were several beautiful plants of different kinds of *Aphelaxis*, another kind of "everlasting" flower: one plant of *A. humilis*, from Mr. Bruce, of Tooting, was about two feet high and three feet across, thickly furnished with flowers, which, in these, are of a rosy crimson. Mr. Bruce had a round bush, three feet high, of *Adenandra speciosa*, covered with large, expanded, white flowers, each petal having a streak of red. There were many excellent plants of *Pimelia spectabilis*; Mr. Cooper had one three feet high, Mr. Clarke one of the same size, Mr. Robertson had one something larger; all these were compactly formed plants, bending with the numbers of their heads of pale pink flowers. There were fine plants of other sorts of *Pimelia*. Mr. Hunt had a beautiful little *P. hispida*, one foot high and twice as much across; and Mr. Barnes had a *P. Hendersonii*, with deep rose coloured flowers; this plant was a yard across, and not nearly so much in height. Mr. Robertson's *Leschenaultia formosa* was very fine, eighteen inches high, by a yard across, covered with scarlet blossoms: a plant about half the size, from Mr. Ayres of Brooklands, was a beautiful object. Mr. Ayres also had a very fine *Crowea saligna*, five feet high, and well branched down to the pot. *Eriostemon buxifolium*, with neat box-like leaves, and studded with pink star-shaped flowers, formed a cone four feet high and a yard through at the base: another fine plant, about the same size, was shown by Mr. Green. An *Epacris grandiflora*, six feet by five, from Mr. Fraser, of Leyton, was superb—a dense bush, loaded with long rose and white tubular flowers. *Podolobium staurophyllum*, from the same source, with deep yellow butterfly-shaped flowers, was very fine; as was also a *Boronia pinnata*, with rosy stars thickly set on a dense bush, four feet high.

Heaths.—There were a great many of these, and all very fine. We will specify a few. Mr. Barnes had a good *Erica Hartnelli*, four feet by four. Mr. Hunt had one of equal size. Mr. Fraser had a splendid *E. propendens* of this size; as also had Mr. Pamplin, of Walthamstow. Mr. Ayres had a smaller one, about half this size, but equally well managed. Mr. May, of Beckenham, had an immense *E. vestita coccinea*, five feet by five. Messrs. Fairbairn, of Clapham, had a smaller plant of the same, better proportioned—three feet high by four feet across. Mr. Balston, of Poole, had a splendid *E. Cavendishiana*, four feet by four; this has tubular yellow flowers. Mr.

Green had an *E. mundula*, two feet by three; and Mr. Fraser had an *E. Humeana*, of equal size. Mr. Hunt had a very large *E. gemmifera*, with scarlet and green flowers; this was four feet high, and formed a thick mass; he had also a plant of *E. perspicua nana*, two feet high, and three in diameter; and an *E. aristata major*, one foot high, and two feet across. Mr. Robertson's *E. sulphurea*, with tubular yellow downy flowers, two feet high and as much across, was very pretty.

Azaleas.—Of the many fine plants present we can only notice a few. Mr. Green had a magnificent plant, eight feet high, of the double red (*A. indica rubra plena*): he had also a densely flowered plant of *A. indica Gledstanesii*, five feet high and four feet across; and a plant of *A. indica exquisita*, three feet high by two feet, forming a cone-shaped plant. Mr. Carson had a standard plant of *Gledstanesii*, with a round head, a mass of flowers, three feet in diameter. Mr. Fraser had a good white, called Fielder's white, with large flowers, of good form, the upper parts being tinted with green. Mr. Barnes had two immense plants of *A. indica variegata*, trained to a flat face, and crammed with flowers; one was four feet by six feet, the other four feet by four; also an *A. indica lateritia*, of similar figure, six feet by five. Such plants as these are most gorgeous. There are no varieties yet produced equal to *Gledstanesii* (white streaked with red), *lateritia* (brick red), and *variegata* (flesh colour shaded off to a white edge): *exquisita* is also a beautiful variety. The others are chiefly valuable as being of some distinct showy tint of colour.

Orchids.—The most remarkable plants among these were the following:—Mr. Mylam's (Wandsworth) *Saccolabium premorsum*, with six drooping racemes; and *S. guttatum*, with eight. Mr. Robertson had a plant of the latter with nine. Mr. Robertson's *Dendrobium densiflorum* had fifteen drooping racemes of orange flowers; and a plant of *D. aggregatum* had ten racemes. He had also *Barkeria spectabilis* with six stems. Messrs. Veitch, of Exeter, had *Cattleya Mossiae* with four flowers; and *Gongora Bufonia* with five racemes. Mr. Mylam had *Oncidium pulchellum* with six stems; and *O. pumilum* with four; also *Odontoglossum citrosum*, a beautiful species, with white flowers having a purple tinge. Mr. Carson had *Cattleya intermedia*, with three flower stems. Mr. Plant, of Stratford, had the beautiful rose-coloured *C. Skinnerii*, with a stem bearing six flowers; and *Calanthe veratrifolia*, with eleven spikes of its clear white blossoms. Mr. Eyles, of Roehampton, had *Coryanthes macrantha*, with two flowers of dingy colour; this, in form, is one of the most singular of its singular race. But by far the most magnificent plant in the

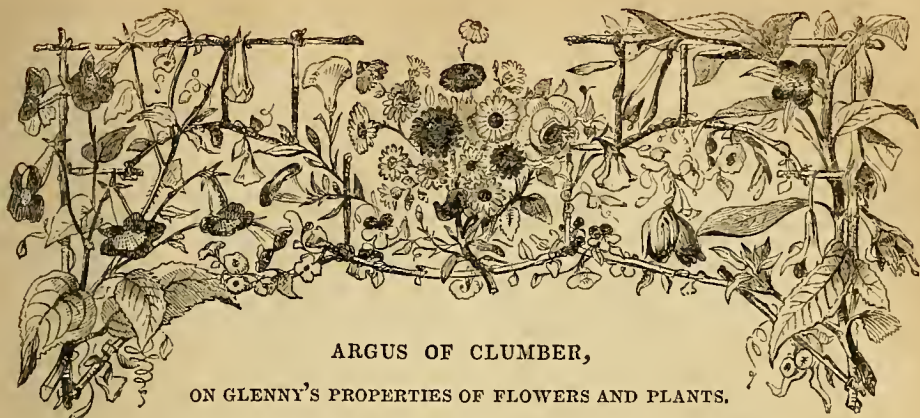
Exhibition was a *Cyrtopodium punctatum*, from Mr. Scott, of Leigh Park, Havant; this splendid plant stood not less than eight feet high, with nine branching panicles of yellow spotted flowers, each of which must have contained some hundreds of blooms; towering above them were ten crests of its noble palm-like foliage.

New Plants.—Of these there was rather a paucity. The most remarkable, as evidenced by the award of prizes, was an Orchid, from the Rev. J. Clowes, of Broughton, Manchester, called *Oncidium phymatochilum*; this, we learn from Loddiges' catalogue, was introduced from Brazil in 1843: it bears flowers more singular than showy; they are very numerous, on much branched panicles, the sepals and petals are very long and narrow, and hang downwards by their own weight; they are of a pale greenish colour, spotted with brown; the lip of the flower is white and yellow spotted: altogether it looks like a small flowered Brassia. Messrs. Veitch had a new species of *Saccolabium*, from Java; it appears to differ in its long præmorse (bitten) foliage, and has densely flowered drooping racemes of white and purple flowers. Messrs. Veitch also had *Eranthemum variabile*, not a new but a very rare stove plant, from New Holland, with handsome variegated leaves, and thin panicles of purplish lilac flowers, individually not unlike those of the Persian lilac. Messrs. Veitch also sent a Cinchonaceous plant, called *Rhodostoma gardenioides*; it is a shrubby plant, with ovate leaves, and bunches of dingy white, small, tubular flowers. Mr. Robertson had *Hydrolea spinosa*, also old, but rare; it is a diffuse growing undershrub, with deep blue flowers, and though a tender plant, is worth trying out doors, in warm situations. Mr. Dods, of Cliefden, sent *Dysophylla stellata*, (see *Ann. of Hort.* p. 333.) Mr. Cameron, of Birmingham, sent *Chloræa virescens*, a terrestrial Orchid, with greenish yellow flowers; *Anthericum paniculatum*, a plant with very long, narrow leaves, and blue scilla-like flowers, on a tall, upright stem; and a species of *Goodia*, with trifoliate leaves, and large, yellow, butterfly-shaped flowers. Mr. Fairbairn, of Wandsworth Road, had *Polygala Dalmaisiana* (see *Ann. of Hort.* p. 130), a hybrid between *P. grandiflora* and *P. cordifolia*. *Epiphyllum superbum*, from Mr. Hoyle, of Guernsey, appears to be a hybrid in the way of Ackermanni; it has brilliant coloured flowers with a purple tinge.

Seedlings.—The *Pelargoniums* were the most important among these. Three of Mr. Beck's varieties of 1845, described at p. 568 of the *Ann. of Hort.*, and to which certificates (the only rewards given to seedlings of the current season) were given last year by the Royal Botanic Society, were here rewarded

by medals; these were, Competitor, Patrician, and Hebe's Lip: the high character of these flowers is, therefore, well attested. Another of 1845, from Mr. Beck, was also rewarded; this was called Bacchus, and was one of the pale rose class. Mount Etna, one of Hoyle's seedlings, rewarded here last year, was again honoured by a certificate: it is chiefly remarkable for its brilliancy of colour. The rest were all seedlings of the present year. There were six fine and very promising ones from Mr. Hoyle, of Guernsey: one called the Governor-General, was a very large, bold flower, of good properties, and of a rich crimson colour, with dark veiny top petals. Exquisite was also of a crimson cast of colour: the rest—Corsair, Abd-el-Kader, Oliver Cromwell, and Scipio, belong to the rose and pink class. Mr. Catleugh had a neat rosy-coloured one, named Agricola; Mr. Smith, of Battersea, had Gipsy King; Mr. Gaines, of Battersea, had Admiration and Sir H. Smith; Mr. Miller had Isabella and Pickwick. All these six latter were of the rosy class, and are by no means bad varieties. Of *Calceolarias* there were many produced, but few of any marked merit. Mr. Kinghorn, of Twickenham, had, however, three fine ones—Masterpiece, yellow ground, with deep maroon irregular markings; Puissant, dark orange ground, with dark reddish-brown markings; and Julia, cream colour, with irregular crimson spots; these were all large and of good form, especially the first, which was rewarded. Mr. Gaines' Lord Hardinge was rewarded; it is of a bright crimson maroon ground, with yellow markings. Mr. Gaines' Lady Smith, lemon colour, with deep crimson markings, is also a good variety. One called Duke of Cambridge, from Mr. Holmes, of Sudbury, was rather novel; it had a cream ground colour, with purple maroon markings. Mr. Green's La Polka was rewarded, but it was not in form quite to our taste; it had a yellow ground, with dark markings, surrounded by a broadish belt of clear yellow. There were several very handsome seedling *Rhododendrons* from Mr. Waterer, of Knap-hill, but as they were unnamed we regret our inability to distinguish them; one with large red flowers, and one or two light-coloured ones were very beautiful.

We may just mention that the *Pelargoniums* were excellent for the season, averaging from one foot high and two feet across, to two feet high and three feet across, according to the style of growing; they were beautifully flowered. The pot Roses were not so good as we had expected, though the plants were cleanly grown, with four or five stems, from one to two feet high, and well furnished down to the pots with healthy foliage.



ARGUS OF CLUMBER,

ON GLENNY'S PROPERTIES OF FLOWERS AND PLANTS.

IF it were necessary to prove the advantages of a fixed standard for floral subjects we need only instance the fact "that no real or decided improvements were effected in the science of floriculture until a correct standard of perfection was determined upon, and the properties necessary to constitute that perfection defined upon principles that could be easily understood and reduced to practice." The mere fact of raising a superior flower cannot be said to benefit the science, except the system by which the improvement was effected can be so defined as to enable others to follow up the benefits thus obtained and therefore, although a few good flowers may have been raised, and a few vaguely constructed rules promulgated for the guidance of florists, still practical floriculture cannot be said to have made any material progress until 1832, when the production of Mr. Glenny's papers on the properties of flowers and plants commenced a new era in the science, and laid the foundation for the most important improvements that have ever been effected.

The extraordinary advances made since that period, and the equally extraordinary fact that every improvement has been an approach towards the properties laid down by Mr. Glenny, is perhaps the strongest evidence that can by possibility be given of the soundness of this author's views, and the perfect principles upon which his system of floriculture (for so it must be called) has been founded.

Every one who takes the most cursory view of flowers, must have observed the extreme beauty of the Rose, the Dahlia, the Carnation, the Pansy, the Cineraria, the Calceolaria, the Geranium, the Picotee, the Rhododendron, the Verbena, the Petunia, &c. as compared with the same flowers of our younger days. Not every one, however, is aware that these are the very flowers that have approached nearer than any other to Mr. Glenny's standards, and that in the same ratio as each flower has approached that

standard, so has it come into notice, been admired and cultivated.

The principal feature in Mr. Glenny's system of floriculture, and the one in which he differs from all others, is simply this, "that he adopts as a fixed standard for the perfection of each flower a model of beauty that it is scarcely possible to attain, but that if obtained cannot be surpassed." His instructions for approaching the required standards are equally plain, and as easily understood; viz. to continue a succession of seed sowing and saving; always destroying every plant that does not indicate some improvement, and saving seed only from those which approach the nearest to the required properties.

It may justly be observed, that to devise a model that cannot be attained is no very difficult matter, but to originate and define a series of models *every approach to which will actually increase the beauty of the subject*, and which, if ever attained, are literally so beautiful as not to be surpassed, requires abilities of no ordinary kind; and hence it is that all who have hitherto attempted have most signally failed, with the single exception of Mr. Glenny, who in 1832 originated the system, and founded thereon a series of standards for the perfection of, and a code of laws for the judgment of, flowers and plants, which have superseded all others, and which now form the basis upon which the awards of all floricultural societies are made throughout the kingdom.

In allusion to these standards Dr. Lindley observes (in a paper on Pine growing) "*Pine growers should imitate the florists; they should place their standard of perfection very high, and should strive to approach it as nearly as they can without being discouraged if they do not reach it*"—thus acknowledging that the system which florists have been the first to adopt is of all others the best adapted for the development of horticultural skill, and, in fact, the only one calculated to improve to its fullest extent every branch of practical horticulture.

ture. This acknowledgment comes with the better grace from Dr. Lindley, from the fact that the author of these standards is the editor of a rival paper (*The Gardener's Gazette*), and a writer diametrically opposed upon almost every subject, but most of all upon some parts of that science of which the Doctor is so distinguished a professor.

We wish we could say as much for others who have meddled with these subjects; but while we bear honourable testimony to the candour and integrity of Dr. Lindley, we are at a loss for terms in which to denounce the unprincipled conduct of those committees and individuals who have endeavoured to separate these properties from their author, by republishing as their own Mr. Glenny's standards for the properties of flowers, not fairly copied, but described in other words, as if to get rid of the legal responsibility of piracy, by changing the terms in which the same identical standards of perfection are explained. We think that in a case like this, the legal responsibility is not got rid of by any change in the language. Some practice in the courts enables us to say, that if a man invents or originates a code of laws for the judgment of any subject, no matter what, and publishes them, it would be held in equity that those laws were his copyright, and that no change of language would free those who infringed them from the legal responsibility. If, for instance, no other writer on floriculture ever gave as the proper standard of perfection in the form of a tulip, that it should be completely spherical, that is to say, a portion of a hollow globe, the author of that law has a claim which none other can set up. If no other writer ever gave as the necessary quality of a Pansy, that it should be perfectly round and flat, the author of the whimsical fashion—for such it must have appeared at first—has a claim which no other could establish. If persons pretending to teach the properties of flowers, or to publish a code of laws for such purpose, have no legal right to adopt the original author's laws and publish them as their own, whether the shapes and properties are described in other words or not, we risk our reputation on the fact that the judge in a court of equity would rule that the original author should not be damaged by any evasion of his identical words; and so also with whatever other feature which may distinguish his standards of perfection. We are not now going into the merits of these standards, nor are we inclined to show for our present purpose whether they are good or bad; it is only necessary to show that the author published certain original ideas, that he either sold them to some one else, whose copyrights they became, or retained the copyright himself, it

matters not which; no man has a right to publish his standard of perfection, either in his own words or garbled and distorted in language. In equity the standards themselves are the copyright, and not the words in which such standards are described. But suppose it otherwise, is there no moral obligation that should restrain a society or an individual from either doing or countenancing any such act? Is there not a positive obligation, equally binding, both upon societies and individuals, to abstain altogether from any act that inflicts injury upon another? We think there is, and it is upon this conviction that we introduce the subject, and we hope by giving as briefly as possible an outline of these standards, as defined by Mr. Glenny in 1832, we shall, by making the public acquainted with their origin, put a stop to further piracy, and do the author no injustice: we therefore add an abbreviation of—

GLENNY'S PROPERTIES OF FLOWERS AND PLANTS.

THE AURICULA.—The pips round, flat, and smooth edged: the edging, the colour, and the eye the same width; tube small, and bright yellow, filled with the pollen or thrum; the paste of the eye smooth, even, and perfectly white and round; truss not less than seven pips, edge to edge, and forming a globular surface. The truss leaves to form a green back ground; the stem stiff, not less than six inches long, nor more than nine. When pairs or collections are shown, they should be of the same heights and different colours.

THE POLYANTHUS.—The edge should be scalloped, but not deeply; the pips, in other respects, circular: the yellow eye perfectly round, the tube well filled with thrum. The centre of all the divisions of the pips similar to the side, the lacing to go down it to the eye, and down the sides of where they divide; lacing the same width all over, and the same colour as the eye; truss not less than seven pips, which should touch at the edges, but not overlap, forming a rounding surface.

THE TULIP.—From one third to one half a hollow globe, when expanded properly; edge smooth and even, petals thick, marking unbroken round the exposed edges of the petals, when expanded, but not to be edged more than half way down the petal; all six petals alike; colours well defined, and the base of the petals, forming the bottom of the eup, must be free from the slightest stain; the white or yellow, or any shade between them, must be pure, and all alike; the stem straight and stiff, from 18 inches to 3 feet in length.

THE HYACINTH.—The pips round in outline, and also on the face, close together, with good stiff footstalks, standing well out from

the main stem ; the spike compact, and tapering from the bottom to the top.

The CROCUS.—Form, like the Tulip ; petals very thick, edges smooth ; colour bright or dense, as the case may be ; and if variegated, the colours distinct and well-defined ; and all six petals alike.

The CINERARIA.—Flowers round ; petals broad and thick, smooth in texture, and blunt at the ends, sitting very close ; centre small ; colour bright or dense ; and the outside of the pip free from notches.

The RANUNCULUS.—Two-thirds of a ball, well filled up ; the petals thick, close, smooth edged and symmetrical ; eye up to surface.

The PANSY.—A perfect circle, with no indentation ; smooth at the edge, petals thick, and of velvety texture ; the marking uniform ; the two top petals alike, and the two side petals must be marked alike ; the colour of the ground on the three lower petals must be the same shade, whether white, yellow, straw, or any other colour. The eye must not break through to the margin, but, in other respects, like the blotch on a geranium, is a pure matter of taste, and has nothing to do with the properties.

The DAHLIA.—Two-thirds of a ball for the exact form, and well filled up to that form in the centre or eye. The petals free from notch, thick, broad at the ends. If cupped, it must not show the back of the petals ; if reflexed, it must be as close as the scales of a fish. They must lay symmetrical.

The GERANIUM.—The five petals must form a circle, without indentation ; they must be smooth at the edges, thick, of good rich texture ; colours well defined. Truss not less than five pips, and so arranged that one does not lap over the other, but form a large showy head of bloom.

The VERBENA.—The individual pips perfectly round, free from notch, divisions shallow ; the substance thick, of fine smooth texture ; truss large, pips edge to edge, not less than seven in a bunch, and not to lap over each other ; colour very dense, or bright ; and all the pips alike.

The NARCISSUS.—The petals to form a circular flat surface ; the cup prominent ; the colours distinct ; the foot-stalks to stand well out ; the bunch of flowers to be level, edge to edge, and not less than seven in the bunch ; the single flowering kinds should be of the same form. The white ones must be very pure, the yellow very dense.

The CARNATION and PICOTEE.—The form half a ball ; the outline round ; the petals imbricated, the second row less than the first, the third less than the second, and so on to the crown ; the petals thick and smooth, edges free from serrature or notch ; colours dense

and distinct, white pure ; every petal to maintain the character of the flower, whether it be a flake, a bizarre, or a picotee.

The PINK.—Half a ball ; petals thick ; edges smooth ; to have the lace round every petal, within a slight stripe of the white outside ; a good eye, of the colour of the lacing.

The CHRYSANTHEMUM.—Round in outline, and half round looking at it sideways ; in other words, half a ball : double, symmetrical ; eye well up and perfect ; petals broad, blunt and thick ; colour decided ; and every petal free from notch.

The RHODODENDRON.—Individual flowers to be round ; slightly cupped, large, well spotted, smooth edged and thick ; colour dense ; and truss a bold, round sided cone ; footstalks thick and elastic.

The AZALEA INDICA.—Individual flowers round ; petals thick, of fine texture, smooth at the edges ; colour dense ; marking, if any, well defined.

The ROSE.—All kinds to have thick, smooth-edged, stiff petals, plenty of them imbricated to the centre ; fragrance strong ; footstalks long and stiff ; form round, rising on the face to half a ball ; colour dense, be it what it may, and the back of the petal same colour as the front. Moss Roses cannot be too thick of moss, and the larger the calyx the better ; Climbing Roses to be short jointed and abundant bloomers ; Noisette Roses to be in good bunches, with strong footstalks to hold them in their places.

The CAMELLIA JAPONICA.—Flower circular ; form half of a ball ; petals thick, broad, and smooth at the edge, and every row of them imbricated to the centre ; colour dense, or if white—pure, if blotched or striped—a distinct contrast. The plant should be short, jointed, and bushy ; the foliage large and bright ; bloom abundant.

The CALCEOLARIA.—The bloom should be perfectly round, every way ; colour at back as bright as the front ; the lip, throat, and calyx, small ; the markings, if any, very decided and dense ; the substance thick and stiff, the stems strong and branching ; the footstalks elastic. The plant decidedly shrubby.

The FUCHSIA.—The flower bud globose, until it opens, without tube ; the sepals on opening to reflex so as to show only the inside surface (like the Cyclamen) ; the corolla to be a decided contrast to the sepals ; the colour of the sepals to be bright, and all over alike, and no green on them. Footstalks, long, wiry, and pendulous ; the flowers to come at the base of every leaf ; the foliage bright and close, and the bloom to hang down free of the branches ; habit shrubby ; stems strong.

The PETUNIA.—The flowers perfectly round, thick, smooth edged, free from serra-

ture, and not indented at the divisions; colour bright and distinct, and, if variegated, the contrast to be decided, and the veins, stripes, or blotches, well defined.

These are all the properties that, we believe, have been published; and, as before observed, the advance of each flower mentioned towards these standards is the most certain evidence that they have been, and still are, universally admitted and acted upon. Copyists there always will be, and the author of "The Properties of Flowers" must share the fate of other original writers; but whoever else may attempt a floricultural standard, and whatever else may be written upon the subject, it is to Mr. Glenny, and to Mr. Glenny only, that Floriculture is indebted for the principles laid down and implied in the foregoing properties; and as it is scarcely possible to form any standard for floral subjects without adopting his ideas, if not his very words, it must be conceded that the merits of having originated the system which has practically advanced floriculture, and enhanced the beauty of floral subjects beyond all precedent, is due to this author, the author of "The Properties of Flowers."



THE ASH.

BY JAMES GRIGOR.

In point of utility this tree ranks next to the oak; and, indeed, for many purposes, it is even the first of all trees.

In high lands it is a poor, scantily-foliaged object, declining rather than increasing in size, and not unfrequently a mass of disease. In valleys, where the ground is good and inclined to be moist, it is a free growing, high, grace-

ful object, anchored fast in the soil, and living on through many generations. Close beside old religious houses, deserted halls, and a few of our old inhabited mansions, it is to be found in possession of the soil it most delights to grow in, and, consequently, exhibiting in such localities all the perfection of the species. In modern gardening, however, the introduction of the ash is not reckoned proper, particularly in front of the windows of a mansion; for though there cannot be a more pleasing object when first in leaf, yet, after all, it is but a common hedgerow tree, and the well understood ideas connected with its "properties and uses" render it inadmissible among such as are of a purely ornamental description. The woods and groves are its proper places; and here, indeed, it disputes the sovereignty with the oak. It is a lofty grower, loftier than the oak, and this of itself gives it a decided pre-eminence. There are many other reasons why it should be introduced very sparingly in home grounds: it is late in leafing; it is by no means entitled to be ranked as an umbrageous object; and, in its living state, it is deficient in classical association. The last objection, as a matter of course, results from the preceding one, for both in Greece and Rome those trees were prized the most which afforded the deepest and most refreshing shade.

The grove, wood, and the open country, then, seem to be the most fitting situations for this tree, and here I am inclined to give it every justice as contributing its share to the beauty of the landscape. Many, indeed, dislike it on account of the transient duration of its leaves, which it is said remind them prematurely of autumn; but this objection is more a matter of fancy than reality; for evergreens, which change not at all, are not reckoned the more interesting on that account. Besides, it is the nature of the tree to shed its leaves early, and is, on that account, looked upon by many as a faithful indicator of the season, performing its part in that beautiful calendar established throughout our sylvan domain. The budding, leafing, expanding, and fading of an ash tree, are all associated with the circumstances of rural life, and are referred to almost as often as the months of the year. At any rate, the dying hue of this object, whilst everything is yet green and fresh around it, is looked upon as a striking accompaniment—mournful though it may be—to a particular season, and valued accordingly.

It will thus be seen, that if the leaves of the ash were prolonged so as to join in the general desolation of autumn, our October would be somewhat deficient in those legible signs which trees are so well calculated to afford throughout the year. It should be remembered, too, that the delicate orange tint

which the leaves frequently assume before their fall, is by no means devoid of beauty; and when contrasted, as it always is, with a field of green foliage, the eye is naturally directed towards it.

Pictorially considered, the ash occupies but a second-rate position: it has none of that boldness of outline which belongs to the oak; it displays none of those masses of light and shade which we see in the elm; and, though a graceful grower, its foliage is generally meagre, and sometimes injured by the winds.

An absurd opinion is entertained by many that this tree will grow anywhere, the fact being, that it is of all others the most restricted to latitude and climate. On unsheltered mountains it will not grow; and though frequently represented as otherwise, it is impatient of the sea air—thriving best in inland countries, either beside rivers, or on slopes of fertile land. As an example, (and it will show how so many come to be misled by books,) I may mention, that in the "*Journal of a Naturalist*" this tree is represented to be valuable from its thriving more universally in all situations than some other trees. Boucher says, it will grow on the bleakest and most exposed places; and Lightfoot recommends it as a tree which will flourish by the sea-side. Cobbett, following these authorities, yet with a show of originality, and with his usual temerity, asserts that it "fears not the winds;" by which he no doubt means that it will rise in elevated and boisterous situations.

No tree is more easily raised in the nursery. An abundance of seeds are generally to be obtained in the autumn; but if sown then, few of the plants will appear in the ensuing spring. It is better, therefore, to mix the seed with mould, and let them remain in an open pit for twelve months, when they should be sown in beds of the usual size, about an inch apart from each other, and covered to the depth of half an inch. By this plan the use of the soil for twelve months is saved, also all the trouble and expense of weeding and attending to the beds during that time. When two years old, the plants should be set out in lines; and their last transplantation should take place before they are five years old; for if allowed to remain longer, they are apt to become stunted and bark-bound shortly after they have been removed.

The wood of the ash is applied to a greater number of purposes than that of any other tree. Tables, chairs, benches, and a great proportion of kitchen furniture; ploughs, harrows, axletrees, waggons, carts, handles to spades, forks, and rakes, are made of it; and, in short, there are few implements of the farm-yard which is not, more or less, of this wood.

The ash should be planted in masses, to the

exclusion of every other tree; for it has a hurtful influence over every other ligneous object; and its bad effects are especially felt when in hedgerows.

GUANO AS A MANURE.*

PERHAPS no manure has proved, to those unacquainted with its strength and the proper method of applying it, so destructive to the florist as guano; and this mischief has arisen from the indifferent nature of the recommendations to use it. Among florists it was fatal to a degree beyond imagination, and the losses sustained rendered the article unpopular among a large class. The exceeding dearness of guano prevents any excess in farming operations, and, therefore, for agricultural purposes, its value was soon admitted; but in an expensive commodity like this now invaluable manure, it is of the highest importance that it be economically applied; and Mr. Clarke's little pamphlet, if consulted in time, may save thousands of pounds to the farming interests. It is as important that the dressing be sufficient, as that it be not excessive; and experience proves that there are different modes of profitably applying it, according to the nature of the soil and the crop which is to be produced. Mr. Clarke has supplied us with his experience, and the present is the sixth edition of a pamphlet which ought to be—must be—in the hands of everybody who professes to use the article under consideration. In a brief review it is impossible to give much information, but there are some passages in the work which are calculated to give a good idea of the nature of the instruction it is intended to convey; and it is only fair that the author should tell us, in his own way, the nature and object of his useful lessons; but the intention is obvious. As a large dealer in the article, it was his interest that everybody should be able to apply it successfully, and he took the best means of securing inquiries by instituting them himself; the author has made some researches to qualify him for the task, and, as he observes:—

"Although the purpose of the present publication be to afford *practical directions for using Guano, illustrated by practical results*, it may not be uninteresting to give here some introductory account of the discovery of this wonderful manure, its chemical properties, the various parts of the world in which it has been found, and the probability of a regular supply adequate to the considerable and increasing demand."—P. 5.

*"Practical Instructions for using Guano as a Manure: illustrated by Practical Results." Sixth edition. London: James Clark, 24 and 25, Billiter-Street. Edinburgh: Adam and Charles Black. Dublin: John Cumming. And to be had of all Booksellers. 1842.

It is so important an article of commerce now, that the discovery is, at least, a subject of deep interest; and, perhaps, a short extract from this portion of the work may be acceptable. The author says,—

“The use of *guano* as a manure was first mentioned by Inca Garcilaso de la Vega, a Spaniard, who wrote on Peru as early as 1723, in a work entitled *Comentarios Reales*.

“On the sea coast,” says he, “between Arequipa and Tarapacá, in the tract of land more than two leagues in length, they have no other kind of manure than that afforded by sea-birds, which dwell in countless numbers on the sea-coast; they lay their eggs on certain islands along the coast, and the quantity of excrement they leave there is astonishingly great. At a distance, the masses of excrement look like the tops of a range of hills. At the time the Incas governed Peru, the birds were preserved with great care; the punishment of death was decreed against those who landed on the island during breeding time, or frightened the birds, or at any time destroyed them. Each island was a distinct province, or, when large, was divided into several provinces, over each of which an overseer was appointed by the Incas, whose care it was to see that every district had its due proportion, and no one defrauded his neighbour of the universally needed manure.”
—P. 6.

We have some particulars of the chemical analysis, in which we are informed of the nature and properties of guano: the component parts, with their several effects on vegetation, are very fully detailed, and its comparative strength, as estimated by the dung of pigeons, is minutely examined, so as to form a conclusion that it is sometimes as powerful when used as manure. This will give us some notion of how much mischief might be done by its careless application, for even pigeon's dung is very much too powerful for flowers; and as it was most likely that all who used guano would use it in much the same way, the destruction of the plants, in all such cases, would be inevitable. This, however, only makes us regret that Mr. Clark's pamphlet was not printed and circulated much earlier. That it has, however, done much good service since it appeared, is obvious; and we recommend every body who is likely to use the article to procure it and read it carefully before they venture to apply the dressing, as the only means of becoming acquainted with the power and value of it as a manure. The author gives a very comprehensive account of the various plans by which guano may be procured, and holds out hopes that there is sufficient to supply several generations. The

report of Jose Villa to the Peruvian Government is interesting, and may be worth quoting, as it is somewhat consolatory, after the complete clearance of Ichaboe, to find there is something to fall back upon for future supplies. The report is as follows:—

“To the State Minister of Finance.

“Most Excellent Sir,

“On my arrival at the Chincha *Guano* Islands on the 15th instant, I at once, in obedience to your Excellency's instructions, proceeded to make all practical investigation respecting them, and I have been enabled to collect information which I flatter myself is much less incorrect than that which the Government has hitherto had; and I now proceed to lay it before your Excellency.

“The three Chincha Islands have a rocky or granite base, upon which the *guano* is deposited. It is not now necessary to discuss whether this substance is an animal production, as its chemical analysis, together with the appearance of the islands, prove beyond doubt that it is the excrement of the birds frequenting them.

“The quantity of *guano* on these three islands has been very variously estimated. Several accounts set down the northern and middle islands at one mile in length, whereas neither of them is much more than half-a-mile in length; it is not, therefore, surprising that calculations thus falsely based should have led to inaccurate results. In order to be able to present more correct statements, I surveyed two sides of each island upon lines forming right angles, assisted by a sea compass, a log line, and a watch. After having taken the dimensions, and made the reductions which the irregular shape of the islands required, I found upon the three islands a surface equal to 1,554,406 square yards.

“The cutting from which the *guano* is at present taken is in steps or terraces, of which the one farthest from the sea is about forty yards in perpendicular height, and the others together, adding the ascent of the surface of each one of them, which is not horizontal, but very much inclined, are forty more. But there are still more elevated eminences, on which the layer of *guano* must be thicker, as the appearance of the islands would lead to the conclusion that the granite surface is nowhere very high, with the exception of the middle island, in which a rocky peak rises above the *guano*. But leaving the excess in the higher parts, and twenty yards more to compensate both for the peaks which may be elevated within the *guano* and the lesser depth of the layer towards the shore, it may be taken at a mean thickness of sixty yards, which gives an aggregate result of 93,264,360

cubic yards. The cubic yard of compact *guano*, as it is found on the islands, weighs more than half a ton; but taking it at half a ton, it follows that there are 46,632,180 tons, which quantity, supposing an annual consumption of 50,000 tons, is more than sufficient for the next *nine hundred years*. Separately I address your Excellency upon the way in which I consider the work ought to be arranged for the shipment of the *guano*, and the saving of labour, time, and money which may be effected. God preserve your Excellency.

“JOSE VILLA.”

—Pp. 9, 10.

The pamphlet consists (after the elaborate historical notice of discovery and uses) of practical lessons for its application under various circumstances. Its preparation for use, however, is good for all purposes; and this consists in mixing it with four times its bulk of earth, ashes, sawdust, charcoal, or even sand, putting it through a coarse sieve to clear it of bones, beaks, and claws of birds. There is to be a layer of the mould or other stuff with which it is to be mixed and then a layer of *guano*, then a layer of mould and another of *guano*, and so on alternately. Then the heap is to be mixed together, and to lay in a heap a day or two before using. The increased bulk enables us to spread it about with greater facility and more evenly than it could be done without the additional quantity of mixing material. We next have directions for its application to turnips, potatoes, wheat, barley, and oats; grass, hay, and pasture land; with elaborate tabular results of various experiments. We then come to its application to horticulture generally, including the kitchen-garden, orchard, and flower-garden; followed by various testimonials of its use and efficacious adoptions by the writer. We conclude by a single remark—that those who use *guano* without reading this pamphlet will run a great risk of doing mischief with an article capable of doing much good; and when the expense and difficulty of cartage over the land of more bulky manure is taken into the account, it must be of the utmost importance that farmers and gardeners should be made acquainted with the use and abuse of an article which may be made subservient to the most distant and almost inaccessible lands.

BRITISH PLANTS.

THE GENUS CLEMATIS.

Character.—*Involucrum*, none, or shaped like a calyx. *Calyx*, petaloid, usually of four or five (rarely more) segments, valvate. *Corolla*, none. *Carpels*, numerous, not bursting; terminating in a bending tail. Roots,

perennial. Leaves, *opposite*. The species are mostly shrubby climbers, but there is only a single native one.



Clematis Vitalba.

C. Vitalba, Linnæus—*Traveller's Joy*.—Stem climbing; leaves pinnate, usually of five leaflets; leaflets heart-shaped, cut; petioles twining; sepals oblong, downy on both sides; fruit with long feathery arms. This is a very vigorous-growing climbing plant, found commonly in hedges, where the soil is calcareous, except in the north, where it is rare. The stem is woody, deeply furrowed, much branched, with deciduous opposite leaves; the leaflets of which are entire, or coarsely serrated, ovate acuminate, or heart-shaped, at the base; the petioles act as tendrils, and become hard and persistent; the panicles are forked, many-flowered, axillary or terminal, not longer than the leaves; the flowers are whitish, with a sweet, almond-like scent, and consist of four oblong petaloid sepals, downy on the outside; they are succeeded by numerous carpels, having long, feathery, silky tails, forming pretty little tufts, most conspicuous in wet weather. The stems climb to the height of twenty or thirty feet or more, branching so as to form tufts resembling bushes at a distance. It flowers in July and August, and the seeds ripen in October. The plant is common all over the middle and south of Europe in hedges and thickets, but always indicating a calcareous soil. It is also found in the Crimea. Among other names it bears those of *C. tertia*, *C. altera*, *Vitis sylvestris*, *V. nigra*, and the Old Man's Beard, which latter is exceedingly appropriate to the white and hairy appearance of the tails of the carpels. Because of its deck-

ing and adorning the ways and hedges where people travel, says Gerard, I have named it the Traveller's Joy.

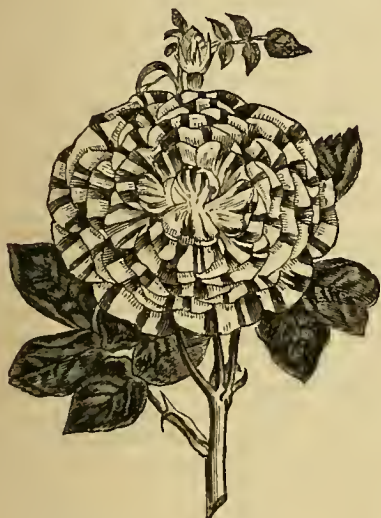
Though less prized in gardens than many of its compeers, it is, nevertheless, useful from the rapid nature of its growth, adapting it to cover naked walls, arbours, or buildings which it may be desirable to screen from the eye: it is also appropriately introduced in a garden wilderness, or imitation of rural scenery; but beyond this it is not a favourite in cultivation. The French gardeners are said to use the twigs, instead of withes, for tying up their plants; and they make very neat-looking baskets, as well as beehives, from them when peeled: the twigs are in the best state for making these articles in winter, and their flexibility is increased by holding them to the fire before using them. Both the fruit and leaves of this plant are acrid and vesicant, producing irritation and inflammation, and are dangerous when taken internally; the leaves have been used as a rubefacient in the treatment of rheumatism. If the herb is eaten fresh, it is poisonous to cattle, but if collected and dried, it loses its volatile property, and becomes good fodder. The young tender shoots, both of *C. vitalba*, and *C. flammula*, are said to be gathered in Italy by the country people, and boiled as a potherb.

HOT-BEDS.

NOTWITHSTANDING the many advantages which are proffered by hot-water apparatus, it will be long before the old-fashioned Hot-bed be turned out of use; and those who manage them properly can maintain the heat with great regularity for a long period; besides which, the dung is just as fit for use when done with, or at any rate nearly so, as it would be before it has formed the Hot-bed. It is true that inexperienced persons, in forming Hot-beds of dung, too frequently use the material in an unfit state; sometimes it has lain too long in the stable, heap, or hole, and has begun to scorch inside; sometimes it is taken from them in a pretty good condition and laid in a heap at once, where the heat would be violent and short-lived. The proper condition can only be attained by shaking out every fork-full of it loosely, to let the air through it all; and every foot or two, as the new heap is made, should be sprinkled with water, unless it be already very moist. It should be thus turned over and shook out until it is all in one heap again; here it will ferment, and by putting a long stake into it, to reach the centre, you may feel whether it is getting too warm. If it be heating too

much, shake it all out again into another heap, and water it where it dries. In shaking it out, the top will go to the bottom of the new heap, and you should contrive also to have the outside stuff of the old heap in the middle of the new, and *vice versa*. Water every foot of it, by gently sprinkling from a water-pot with the rose on the spout. Again put in the stake, and when the heat is getting moderated a little, you may mark out your space, and build your heap for the reception of the frame and glass; but, as you shake it out this time, keep patting it down with the fork, not to keep it too close, but to keep it well together. The space you intend it to occupy should be marked out with four stakes stuck in the ground the height you intend it to be, or thereabouts; and this space should be about one foot clear all round the frame; and it should be built quite four feet high at first. It will sink nearly a foot. In building this square heap, you should be careful to press down all over alike; when this is done the stake should be driven in to reach the centre of the heap, that you may draw it out to feel the heat every day; and when it rises a little, put on the box or frame, and three inches thickness of good loamy soil from rotted turfs, whether you are going to grow things in pots, or cucumbers, or melons in the soil itself, or sow seeds in, it is of no consequence: the soil keeps down the rank steam which would come through the dung if not so covered. The frame-glass should then be put on and covered close. In the day-time, if the heat be too strong, it may be wetted considerably; but, if it be only moderate, lift the light a little behind to let out the steam. The bed in this state is fit for any thing—for Dahlias to break, or strike in. Annuals sown in pots will do after the heat has gone off a little; but for Balsams, and Cockscombs, which are pricked out nearly as soon as they are up, it will not be too hot now. The seeds of Cucumbers and Melons may also be sown, though they ought to be ready to put out, to have all the benefit of the heat from the first; still they will do sown two in a pot, and heated in the same bed they are to be grown in. We are not here giving the management of the contents of the bed, but rather of the bed itself. When the heat declines, which, as a matter of course, it will in time, it must be reinstated with fresh linings of hot dung; a supply of which must be kept for the purpose. With a fork you must remove all the dung that projects in front of the frame, straight down to the ground, and even undermine it a little; and against it pile up hot dung to fill the space occupied by that which was taken away; and there must be more in quantity, so as to form a bank up against it. This will revive the

heat a good deal ; and when it again declines, serve the back the same way, and eventually, the two ends also. By these means, the heat may be revived and kept up for a considerable time ; because the same thing may be repeated two or three times over, so long as the principal mass of dung be not absolutely saturated ; but a good deal of this may be taken out by undermining small portions at a time and tucking in hot dung in the place made vacant. However, unless it be for Melons or Cucumbers actually growing in the soil, it is better, after the first linings all round, to make up fresh beds to succeed. It is only in cases where the plants are actually immovable, that we must spend a good deal of time and trouble to renew and retain heat ; for, if the subjects be in pots, it is far easier to make new beds and remove the plants than to keep up the heat of old ones.



THE ROSE ; THE QUEEN OF FLOWERS.

As flowers, to permanently hold the rank in which they are placed, must possess properties that will be appreciated by the public, we are about to justify the popular title given to the Rose, by showing that it comprises in itself a greater share of valuable qualities than any other flower in cultivation. As a florist's flower it ought to possess sundry features, which perhaps some of the common observers would hardly esteem in detail, though they would instantly decide in their favour from the effect on the bloom as a whole. Not one of the properties laid down by the florist is altogether useless even to the least observing of the public. Thus, the thickness of a petal (which unless the flower be handled would

hardly be noticed by one who was not a florist) causes a Rose to last a very long time in perfection, while the thin flimsy petalled Roses, however beautiful in colour, scarcely bear plucking when in full bloom, without dropping to pieces. But let us look to the qualities of the Rose. Its beauty, to begin with, will hardly be questioned ; for it is universally admired by all classes, all eyes, from the infant to the aged. Its beauty, too, is so lasting : from the instant the bud bursts and shows the colour of the flower, until the last stage of full-bloom, it is beautiful ; and whether it be on a sprig separated from the plant, on the graceful standard tree, or the bushy shrub ; and whether alone amidst the green foliage, or among a thousand others, it is still beautiful. Its fragrance, conspicuous among a thousand other flowers, is pure ; as the lonely occupant of a favourite vase, is grateful and lasting ; and when the flower is in ruins that fragrance remains. Do we require some graceful plant to cover the lattice of a window ; give us the Rose. Do we require something to conceal the whole front of a house ; let it be the Rose. Do we desire flowers of golden yellow, a snowy white, a blush, a pink, a crimson, a deep maroon ; it must be the Rose. If we desire to see flowering shrubs ; let the best be a Rose. Would a few standard trees look well as we approach the house ? nothing so good as a Rose. Must we have something sparkling, bold, brilliant ? we must have the Rose. Do we require something delicate, weeping, or creeping ? still it may be found among the endless varieties of the Rose. The Rose-garden is never out of bloom ; from the earliest spring to the latest autumn, every day produces Roses ; and no plant so obedient to the gardener, if he desires to produce Roses through the dreary days of winter itself. Let every body then, with even a small garden, attend to the Rose ; for it will repay us for our care, and give us its sweets even after death. Those who live too near a metropolis of smoke, and densely-built streets, may find some difficulty ; but there are more plants killed by neglect than smoke, even in the narrow streets of London. Those who take care that a garden is neither too wet nor too dry, and that a soil is neither too rich nor too poor, will do a good deal towards growing the Rose successfully ; and the rest must be left to air, and situation, and good management. The Rose luxuriates in strong ground and open air ; but some allowance is to be made for the nature of the root : and all situations are not equally good for all kinds. For instance, the common briar or Dog-rose will grow anywhere ; it flourishes even among the roots of the quickset-hedge,

or on the dry and parched soil of a bank. Upon this stock, tens of thousands of finer varieties are annually grafted or budded ; and, strange as it may seem, standard roses, on this account, if removed without dung to the roots, flourish any where and every where. The fact is, that the stock governs the bud ; and, if a bud of a Rose of any kind, however rich it may require ground for its own roots, were to be united to one of the common briars growing well, in the worst situation and soil that could be found, and the remainder of the briar be cut away, the Rose would flourish in spite of both the disadvantage of the situation and the poverty of the soil ; so that any owner of a common hedge-row, in which there were plenty of briars, could in a single season have all the finest varieties of roses growing on the briars instead of the simple Dog-rose. Thus could be changed, in one year, one of the most common of all common hedges into a splendid plantation of the first flowers in the world, of all colours, sizes, and habits of growth ; and nothing would be better worth a gardener's or a gentleman's attention than that of treating all his internal hedges after this fashion. The Arabian spices could hardly impregnate the air with more delicious fragrance. No bloom in the whole collection of European flowers could be more beautiful ; and the very roses which, when growing on their own roots, require the nicest attention to the rich and strong quality of the soil, would be found luxuriating on the sap of their aboriginal brethren. It is only necessary in such case as inoculating a complete hedge that the remainder of the briar be prevented from growing ; not a new shoot of the old stock should be allowed to flourish ; every bud as it comes should be rubbed off, until the new Roses take, as it were, possession of all the strength, and vigour, and appropriate the growth to itself. A healthy briar might have twenty different sorts of roses budded on it ; and if the habits were similar, they would all flourish though the stock were growing on a common or in a desert. The principal subject to remark upon here, is the different nature of plants to the stocks they thrive upon. It is clear, that the soil should be made to suit the stock, therefore, and not the Rose ; for Roses that would linger and die in the dry miserable soil of a hedge-row, grow in perfection on the very Dog-rose that lives there. Not that we are to be understood to infer, that the briar would not grow stronger in a rich soil, or, that Roses growing on them would not flourish more vigorously when on stocks so circumstanced ; but, Roses may be grown too strong, and by such growth be prevented from blooming so freely : indeed, in many places where standard

Roses have been planted, the great strength of the growth has frequently militated against the elegance and well-being of the plant. In many instances we have seen a standard Rose more like a loose bundle of willow-sticks than anything. Their extreme length, the growth upwards, and the unmanageable nature of the wood, in any attempt to form or to provide for a handsome head, all show the necessity of limiting in some degree the quality of the soil in which a plantation of standard Roses is to be made. These, however, are mere general remarks relative to the claims the Queen of Flowers has upon our taste and our pride. To say nothing of its being our national emblem, it possesses so many high qualities, so many advantages over any other of our floral beauties, that all ranks admire it. In all other flowers there is a vast variety of isolated claims. The Tulip, the Dahlia, the Hollyhock, have their devotees, but they have also their enemies ; and the first thing these nose admirers cry out is—"They have no fragrance!" The Tulip and the Dahlia are gaudy, the Auricula is delicate, the Carnation and Picotee are pretty, the Camellia splendid ; all have their peculiar admirers ;—but they all love the Rose.

BIGNONIA RADICANS.

THIS beautiful climbing plant is not grown one half so generally as it should be, for besides being hardy, and capable of covering any height of wall or building, the brilliant scarlet flowers coming in bunches at the end of every shoot, make a splendid show ; and few things are more gay during the season of bloom. It is a North American plant, and was introduced about or before 1640. The early cultivators complained of its not blooming, and Parkinson says, "This never bore flowers with me, nor any other that hath it in our country." The truth is, that it will not bloom until the plant has acquired maturity. It was raised from seed, perhaps, at one time, and a seedling plant requires five or six years to grow before it flowers ; potted plants that have been raised from cuttings bloom much earlier. It is a deciduous plant, and will in a few years reach to the top of the highest building, for which reason it has been always recommended as a handsome subject to cover unsightly walls, houses, or other ugly-looking objects. There are many plants raised from imported seeds, but they rarely ripen in this country. The plant throws up suckers, which should be taken off and planted out young in the places in which they are to flower. Layers strike freely as well cuttings. The only pruning they require is to cut out all the weak little shoots, and leave nothing but the

strong wood, which should be shortened to two feet at the most. When the plant once begins flowering the bloom comes in abundance.

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**ALTHÆA FRUTEX, OR HIBISCUS
 SYRIACUS.**

THIS very attractive shrub is, when in a healthy state, one of the prettiest of the autumnal flowering hardy plants, but was for some years considered tender. Parkinson recommends protection in winter, assuring us that "they are somewhat tender;" and says they must "not be uncovered in the winter time, nor be abroad in the garden, but be kept in a large tub or pot in the house, or in a warm cellar, if you would have them to thrive." It is a showy subject, perfectly hardy, and comprises a good many varieties of colour. By some it is called the Hollyhock tree, from the great similarity of the flowers to a single Hollyhock. Few plants thrive better in ordinary shrubberies; but in all the composts there ought to be some peat among the loam, for without this many plants get scrubby and unhealthy, and it is the case with the *Althæa Frutex*, which should be treated almost as an American. It is best propagated by layers, though cuttings will strike. The best way to select plants is in the autumn, while in bloom, for you will find several different colours, which you may select according to your taste. It is rather a rapid grower when it takes well to a place, and therefore must have plenty of room.



THE PETUNIA.

MANY persons affect not to understand the properties of the Petunia, as laid down and illustrated by Mr. Glenny, yet nothing can be much clearer. It may be, as some say, that the flower is not naturally round, and that the graceful outline, forming a point in each divi-

sion, is not likely to be got rid of. It may be the flower is naturally of thin flimsy substance; but so far from these things rendering it desirable to forego the favourite circle for an outline, or thickness for the character of the flower, they are strong reasons for insisting upon them as improvements. It is certain that the most difficult point to get over, in this as in almost every flower, is its flimsy nature; and nothing but perseverance in good earnest can get over it. Every seedling that comes of thicker substance, no matter how ugly the colour, should be saved, and seeded from as an advance in one important and difficult point. With regard to the circular outline, there has been considerable advance made. We have seen varieties which had nearly lost the point, and hardly showed the divisions; and there is no reason to doubt it will approach the standard as nearly as most flowers do. It is very inconsiderate of any one to say, now, what can and what cannot be done in the improvement of flowers, especially after what has been accomplished with the pansy. There are certain features which belong especially to a tribe of flowers, and would never be got rid of—such as the divisions in the margin—but these may be, in a great measure, hidden by the manner in which they lap over each other. The *Auricula* and *Polyanthus* are divided into segments at the outer edge, and one of the faults was, and even now is, in many varieties, that they are divided too far in towards the centre, and even the eye is cracked; whereas the crack or division should never go beyond the coloured portion, because that conceals it; while the bright yellow of the *Polyanthus*, and the snowy white of the *Auricula*, expose it, and the flower is spoiled thereby. The Petunia is also divided, and the more the divisions show the more ugly is the flower. The number of those which revert to the worst forms, among a bed of seedlings saved from the best, shows how Nature struggles to regain her simple and original character in every one of her works. It is only perseverance in a given path that overcomes the obstacles she places in our way, when we desire to change her features for others more accordant with our tastes.

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**PLANTS USED AS SUBSTITUTES FOR
 SPINACH.**

THE number of plants used as substitutes for Spinach is considerable, although, in consequence of the ease with which a supply of that vegetable itself can in general be commanded in England, they are less grown than perhaps some of them deserve.

One of the oldest plants cultivated for this purpose is perhaps the "Herb Patience,"

(*Rumex Patientia*,) a species of dock, a native of Italy, and introduced here at a very early period. It is a strong-growing perennial plant, with long, sharp-pointed leaves, and attains a height of about five feet when allowed to flower, which it does in June. The seeds of this plant should be sown in March or the beginning of April, in drills from twelve to eighteen inches apart, according to the fertility of the ground. They should be kept clear of weeds, and thinned out to about nine inches apart in the rows. A slight coat of dung should be spread on the ground, and dug in, in the spring; and when the leaves are nearly half grown, they may be gathered for use. If the plants are strong, they will bear two or three cuttings during the season, and with a repetition of the routine culture above indicated, they will last several years. In cooking, a portion of sorrel should be added to the leaves. It is a good deal cultivated in the north of Europe, where the winters are too cold for the Spinach.

The *Wild Spinach*, or Good King Henry, (*Chenopodium Bonus Henricus*,) is a native of loamy soils in many parts of the kingdom. It grows about two feet high, producing large triangular leaves, and flowering in June. It may be propagated by dividing the roots, or by seed, as recommended for the last plant, to which its treatment should be assimilated; and being like that, a perennial of strong growth, a plantation of it will last several years, if the leaves are not cut over too often.

Nearly all our other native *Chenopodiums* are used as substitutes for Spinach, but they occur so abundantly in a wild state, that there is no occasion to introduce them to the garden, being there some of the worst annual weeds the gardener has to contend with. They are generally called *Fat Hen*, especially *C. album* and *C. urbicum*, two of the most common, and best for this purpose when gathered quite young. Generally growing with them, closely allied to them botanically, and no doubt equally useful, are found various species of annual Orache, (*Atriplex*,) one sort of which, growing on the sea-coast, (*A. littoralis*,) has been recommended as supplying a very good potherb.

Several species of *Amaranth*s are grown in hot climates, especially in the East Indies and China, where they supply the place of Spinach, being by some preferred to that vegetable. In this country none of the species seem to grow sufficiently well in the open air during our summers, to enable us to judge of their usefulness as potherbs. But in pits or on hotbeds they can be well grown, and in a small space of time, and they are much liked by those who have tried them.

The *Han-Tsi* of China is the *Amaranthus oleraceus*, and is very extensively cultivated in

that country. It appears to vary according to locality, a variety grown at Shanghai being much inferior in the size and succulency of the leaf, to another variety grown at Chusan. This latter sort grows nearly three feet high, producing blunt waved leaves, about five inches long, and half as broad. The whole plant, including the flowers, is of a pale green colour. The leaves, when cooked, have a slight acidity, which considerably improves their flavour.

The *White-stemmed Amaranth* (*Amaranthus albus*) is a species much valued in the East Indies for its succulency and delicate appearance. It attains about the same height as the last, the stem and branches of a clear white colour, the leaves ovate on long footstalks, and the greenish flowers produced in axillary spikes. To grow this plant well, it appears to require a moist high temperature, a good dung-bed being a favourable situation for it. The heat should vary from 70° to 80°, and the plants should be shaded from bright sunshine. Under such treatment the crop would be ready in two months, and a second crop may be had from the same plants, by not cutting too close the first time. The leaves form an excellent Spinach, and the stems are cut up and dressed in the manner of sea-kale or asparagus. As all depends on rapid growth with this description of plant, a very rich light soil should be used, and all checks to their expansion should be carefully guarded against.*

In addition to the above may be mentioned *Basella alba*, *rubra*, and *nigra*, plants requiring similar treatment to the last mentioned, and therefore not likely to excite much attention here, although they are extensively cultivated in the warmer parts of China. They are annual or biennial plants, although when grown for this purpose they would of course all be treated as annual.

The young leaves and shoots of the sea-beet (*Beta maritima*) afford a very tender Spinach in early spring, and could be easily gathered on many parts of the coast by those who wished to try their quality.

Perhaps hardly any of our wild plants has been so much used as a spring Spinach, or has so well retained its place to the present day amongst the peasantry, as young nettle tops, (*Urtica dioica*.) The stinging-nettle certainly affords a potherb of no little merit, although many affect to turn up their noses at so common a plant. The annual species could be made to produce a much more succulent green, later in the season, if the flavour should recommend them.

But a list of plants used as substitutes for

* Other species of *Amaranth*s cultivated by the Chinese as spinaceous plants, are *A. polygamus*, *A. tristis*, and most probably several others of this very extensive genus,—the veriest weeds of tropical climates.

Spinach would include nearly all of early and succulent growth, in almost all climates, as we find the poisonous or suspicious properties of nearly all are dissipated in the process of cooking. The following are the names of a few used in different countries in this way:—The young shoots of the Black Bryony (*Tamus communis*). Chickweed (*Stellaria media*) is said to afford a very good green, and can be easily grown to a very succulent state. A plant of somewhat similar habit (*Claytonia perfoliata*), a native of North America, is also said to be very good, and does very well in poor soils, although the produce is not very great. The common Shepherd's Purse (*Thlaspi bursa-pastoris*) is extensively grown for the market of Philadelphia, where, by good culture and care in selecting seed, the plant has attained a size and succulence which it never arrives at here. It is said to possess a mild agreeable flavour. The Chinese grow the *Convolvulus reptans* in trenches of water, which plant affords them abundance of leaves in the hot months. Many more of our wild plants might be mentioned; even the suspicious Pilewort (*Ranunculus Ficaria*) is gathered and used extensively in Sweden; as are the tender tops of the milky Sowthistle (*Sonchus oleraceus*) by many.

CHINESE AND JAPANESE FRUIT.

As we shall soon be receiving various accounts of the numerous fruits with which our people wish to become acquainted in China, the following summary from the *Transactions of the Horticultural Society* in 1821, will be interesting. It is taken from a paper by Dr. Lindley, on the Tropical Fruits likely to be worth cultivating in England, and doubtless comprises the greater number of those with which China will make us acquainted:—

“In these latitudes the cultivated fruits, with the exception of Sapindaceæ, consist almost entirely of the same natural orders as those of Europe, or at least approximate considerably to them. The place of the Myrtaceæ, Guttiferæ, and Terebintaceæ of countries near the Equator is chiefly occupied by Pomaceæ and Prunaceæ; the latter, however, differ universally in their kinds from what are known in this quarter of the world, and not unfrequently surpass them in quality, if we may credit the best authorities on the subject.

“Of *Pears*, there are several kinds; but, besides those of a common appearance, Marco Polo asserts, that there are at all seasons in the markets in Kin-sai, Pears of an enormous size, weighing ten pounds, a piece, which are white in the inside, melting, and with a fragrant smell. Vambraam, also, speaks of Pears of a large size, which were commonly sold by the road-side in the north of China.

He describes them to have measured fifteen inches and a-half in circumference the long way, and fourteen inches the round way; their colour of a fine golden yellow, their flesh melting, and their taste very agreeable. He considered it to be the only kind cultivated in the northern provinces.

“Of *Peach-trees* there are three principal kinds: the Dwarf Peaches, the Peach Bushes, and the Tree Peaches; of each of which there is a vast variety of sorts. The two first are principally esteemed for their flowers, and as objects of ornament. The tree Peaches are what the Chinese cultivate for the sake of their fruit; and some of them grow to the height of forty or fifty feet; but these seem to be of a particular kind, and their fruit is of middling quality. In favourable seasons, the markets of Peking abound in the greatest variety of Peaches; some of which arrive at a prodigious size, being much larger than they ever are in France. The Chinese gardeners speak of fruit weighing two pounds, and Marco Polo asserts that he has seen them of that size in the district of Cang-chew. The largest, however, which the French Missionaries at Peking ever saw, were about three inches and a half long, and three inches broad. These large varieties are very beautiful, but their taste is in general inferior to their appearance. Those, however, of Siang-chou (a villa of the emperor's) equal the most melting and delicious of Europe, more especially one sort, which is late and of indifferent appearance, but of an exquisite flavour. The varieties are classed according to the form, colour, size, and time of ripening of their fruit. Some have a green flesh, others white, pale yellow, orange, and marbled; their form is flat, round, oval, or produced on one side into a beak, which again is either straight or curved. The gardeners possess the secret of preserving fruit gathered in October until January, and with all the beauty, freshness, and flavour which it possessed when first taken from the tree. Although well acquainted with the European method, they prefer budding their fine kinds upon stocks raised from the seed of the best varieties.

“Of *Grapes* the Emperor Kang-hi mentions three kinds which he caused to be introduced from Hami and the neighbouring districts. Of one sort the berries are red, or greenish, and long like the teats of a mare; of another, the flavour and smell are very agreeable, but the berries not large; those of the third variety, which are the most delicate, the sweetest, and the most highly perfumed, are not larger than peas.

“Of the *Pomegranate*, Rumphius says two sorts are known, one with exceedingly sweet fruit, and the other with a vinous taste, and small granules with large seeds.

"The *Jujube* tree (*Ziziphus Jujuba*) is universally cultivated for the sake of its fruit, which is brought to a very high degree of excellence both in appearance and flavour. There is no fruit tree, perhaps, which requires less care than this, and none certainly on which the Chinese have bestowed so much pains in the improvement of it; it always bears abundantly, and is sufficiently esteemed to form a part of the dessert at the best tables. Among more than sixty kinds which they enumerate, there are early, late, long, round, large, small, white, yellow, red, violet, pink, murrey-coloured, perfumed, honey-scented, sweet and acid sorts, and finally, some with kernels and some without them. The tree is common enough in this country, and probably would bear fruit in a common green-house, with a very moderate degree of artificial heat.

"The *Kaki* (*Diospyros Kaki*), is another fruit which has never been perfected in England, although the tree has been here for many years, and although there is no doubt that it would well repay the trouble of cultivation. The fruit is the size and shape of an apple, with a reddish orange coloured skin; the flesh is semi-transparent, brown, soft, and pulpy, with a most agreeable, honey-like flavour. In the inside are several hard seeds. Of the varieties the chief are,

"1. *Ono Kaki*, of which the fruits are like an orange; being dried in the sun and mixed with sugar, they are preserved and sold as figs.

"2. *Kineri Kaki*, of which the fruit is not fit for drying, but must be eaten fresh.

"3. *Ssibu Kaki*, of which the fruit is bitter and not fit to eat. Two varieties are figured among the oriental drawings of the Society.

"The *Longan* or *Long-yen*, and the *Li-tchi*, two species of *Dimocarpus*, are held in high estimation, and are cultivated in considerable variety; the inhabitants eat them with tea. To the account in the *Transactions* of the Society, I find it necessary to add nothing, except that the trees bear fruit much more quickly when raised from cuttings than they do if reared from seeds, requiring eight or nine years in the latter case, and only three or four in the former. The fruit of the *Long-yen* which was produced at Mr. Knight's of Lee Castle seems to have been in every respect as good as any grown in China.

"The *Loquat* (*Eriobotrya japonica*), has also frequently ripened its fruit in the conservatories about London; it is sufficiently well known to render any account of it unnecessary.

"The Chinese also produce at table the thickened peduncles of *Hovenia dulcis*, and they are said to taste like a Bergamot pear, but I believe they are not in much esteem. There are, probably, some others of minor importance which have escaped my recollection, not to

mention the excellent *Psidium Cattleianum*; but I apprehend they will be found to be such as are far surpassed by the commonest garden fruits of our own climate."



THE FLAT PEACH OF CHINA.

THIS fruit is of truly singular form, and perhaps will be best described as having the appearance of a Peach flattened by pressure at the head and stalk. Its upright diameter, taken through the centre from eye to stalk, being eleven-sixteenths of an inch, consisting wholly of the stone, except the skin; that of its sides is one inch and one-eighth, its transverse diameter being two inches and a half. The head of the fruit is cracked in such a manner as to look like a broad and rather hollow eye, of an irregular five-angled (or lobed) shape, surrounded by the appearance of remains of the leaves of the calyx: the whole surface of this eye is roughly marked with small irregular warted lines, like the crown of a Medlar. The colour of the skin of the fruit is pale yellow, mottled or rather speckled with red on the part exposed to the sun, and covered with a fine down. The flesh is pale yellow, having a beautiful radiated circle of fine red surrounding the stone, and extending far into the fruit. The stone is flatly compressed, small, rough, and irregular. The consistence and flavour of the flesh is that of a good melting Peach, being sweet and juicy, with a little noyau flavour or bitter aroma. This Peach is cultivated in China; representations of it being continually seen on the papers and drawings received from that country: and it is well known at Canton, where it is esteemed as a good fruit. A figure of it is now given; the

drawing for which was taken from specimens exhibited to the Horticultural Society. The plant which bore the fruit was sent to Mr. Braddick from Mr. Kirke's nursery, under the name of the *Java Peach*. Mr. Kirke received it through a friend from Java, to which country it had no doubt been carried from China.

THE FLORICULTURAL ENTHUSIAST.

BY AN OLD FLORIST.

NEVER was advice given more earnestly, nor was it ever more needed, than when I entreated my boy to purchase nothing until he had the cost of it in his hand, that he might see and feel it, ere he expended it; for I felt, and thousands of others have had experience to confirm it, that credit is the creator of extravagance; and that the very best of us incur expenses with open accounts that we should never think of incurring had we the money first in our hands to look at. We think nothing of buying a flower or a plant that takes our fancy, when we have only to order it to be sent home, and see our bill once a year. Credit is the same in all things. Who is it that is extravagant in dress? Not the man who takes his three or four guineas out of his pocket to pay for his coat, but he who has only to write for his tailor, who troubles him but once a year. A tradesman who finds his Christmas bills come tumbling in one after another grumbles heartily, and is astonished they should be so high; vows he will be more cautious next year; resolves, perhaps, that he will pay as he goes on; makes the most convenient settlement he can, and before his vows and resolutions are cold, gives new orders and goes on the same as before; with this difference, that he is cautious with his first orders, bold with his second, forgets all his determinations and is extravagant with his third. In short, no man who has the temptation of great facilities for credit, is so cautious as he who determines never to wear a thing until it is paid for, and never to buy a thing until he can look at his money and the article he wants at the same moment. I have known a poor weaver, at Bethnal Green, buy a five-pound tulip, to pay for it by weekly instalments of five shillings, to be taken from wages hardly enough to keep him decently. If that man could not have bought upon credit he would never have bought at all, because he never got five shillings ahead of his wants; but the facilities afforded him of indulging in his fancy, without first getting the money, was his ruin; that is, if it be ruin to be always in want, always in difficulty, always in debt. When we have the money in one hand and the article we desire in the other, we are in a condition fairly

to balance one against the other; but when the article we want is before us, and we have not the money to pay for it, we are not in a condition to estimate the one against the other. Possession of the one is offered to us and we wish for it: we think we shall have the money long before pay-day comes. It is nothing to talk of, and we can be gratified six months sooner by taking credit: very little persuasion on the part of the seller settles the business. We possess ourselves of the object we require, or rather fancy we require, and if we waited until the pay-day before we possessed it, and had the money in hand, the money would tempt us to abstain. If, therefore, it were the last words I had to utter, and wished to leave the most valuable advice that youth, and all beyond youth upwards, could act upon, it would be, "Buy nothing until you have the money in your hand to pay for it, that you may fairly estimate which will be of the most service to you." This advice I gave to a son, but his ardour was too much for his prudence, and, as will be seen by the few striking instances of folly and obstinacy, he was perpetually in some scrape or other. I have always been an amateur florist, but my ambition was not of the highest order. My pinks and auriculas were my pride to show at the Britannia or the Greyhound—a sort of annual excuse for a feast; and if I won a fourth-rate prize, I felt there was no greater man in existence, except the winners of the first, second, and third; nay, I sometimes would not admit that they had fairly won. I have often noticed that theirs had more faults than mine, but I never examined whether mine had more than the one beneath me. I took my youth to a Show at the Britannia, which was then a country public-house, overlooking the Shepherd and Shepherdess fields, by the City-road: on that occasion I got a prize, amounting in value to, perhaps, half my day's expenses. This pleased me, and the boy saw it; it roused the youth's ambition, and he chatted with some of the most cunning of the floricultural foxes present, among the rest with old Gabel, next to whom he sat all the dinner time, and an hour afterwards they were in earnest conversation. This was an Auricula Show; the flowers were brought on the table, and the discussion upon their merits was interesting enough. Gabel had got bills printed about his Tulip Show, which was to open in the middle of the next month, "admittance, one shilling;" but he gave my boy a general invitation, which I thought rather kind than otherwise. For some days all the young scamp's thoughts and conversation was upon flowers. Gabel had made a florist of him, and there was no getting a word in edgeways about any thing but flowers. I found he had been

several times to see his tutor, and that in three weeks from the time he had visited the Britannia, he could talk as glibly about biblœmens, roses, and bizarres, as half the old florists. I made up my mind that flowers were a very innocent fancy, and far from discouraging it, I gave him five shillings per week to spend in them, apart from his regular allowance of pocket-money, with the injunction I have spoken of, that he should save it up till it was enough to buy anything he wanted. The tulip-blooming season arrived, and the instant business was over, the evening was spent at some place or other where there were flowers, and I occasionally went with the young aspirant to floral honours. To my astonishment he pointed out, in different persons' beds, many tulips of which I knew but little; and he gave early promise of advancement. After the tulip bloom was over, Friend Gabel used to be calling oftener than I liked, and I found the youth suddenly thoughtful and dull; whenever flowers were mentioned he endeavoured to turn the conversation. This I wished to fathom, and resolved to see Mr. Gabel upon the subject of his visits, when I found he had inveigled the boy into the purchase of a bed at the price of twenty pounds, and was looking for his money. Of course I told him my mind upon the subject, and insisted upon knowing how much he had paid towards it. This brought out the fact that he had received a pound when he bought them, and fifteen shillings, at three payments, since: he had delivered the tulips at taking-up time. I observed, that except not attending to my advice as to abstaining from any purchases except for money, there had been nothing wrong; and I told my young gentleman that I had found out the cause of his apparent annoyance, and wished to know how he had been so unmindful of my advice. The truth then came out; Gabel had made the most of his enthusiasm, and inveigled him into the purchase, upon the condition of receiving the money at five shillings per week, and was there from time to time threatening the boy to tell me, unless he could get five pounds for him: this was wronging the youth and breaking his spirits. I need hardly say the tulips were not worth the money. I sent them back, and insisted on a return of the cash he had advanced, or its amount in such flowers as I should select. This was reluctantly agreed to; and rather than disappoint the lad I advertised for a bed, which I got for half the money, and which was worth three of the one he had first bought; and having severely lectured him upon departing from the course I had laid down, I provided him with a suitable stage, that he might not grow his flowers under a disadvantage; it would do

also for carnations, (for picotees were not thought of at that time as show flowers,) and seeing that he was bent upon the cultivation of flowers, I was advised to lead rather than check him. The tulip bloom came round, and he had a pretty good one; but as to a night's rest, there was hardly such a thing for himself or anybody else. He was out at twelve or one o'clock to see that all was right; and if there were the least indication of wind or frost, for weeks before they opened, he would get up and cover them in the night with a second layer of mats. He often walked to Mr. Austin's, at Clapham, to see his flowers, and back to breakfast, though it was five miles from his own flowers, and a bad time of the day; and he was the first I ever saw who never allowed the frost to touch even the bed from the moment the bulbs were in; nor do I recollect having seen his flowers so notched and blighted as I have those of other persons. One severe week, just before they had begun to show their shapes, he had actually taken both blankets off the bed, and laid without any. Auriculas were favourites with him, and he was successful with them; and he has walked to the Greyhound, at Dulwich, with two boxes formed to hold one pot each, and shut up in front, and carried them the whole distance with a yoke, like a milkman carries his pails—we never dreamed of Dulwich omnibuses at the time—twice he did this before he was successful; but, nothing daunted, he succeeded. No one could approach him at last; and in Mr. Barr's estimation there was no one could beat him in the culture of anything he undertook.

He died young, and among his papers was found a manuscript book full of memorandums; among them, many hints about the culture of particular flowers; many scraps after the fashion of a journal; some receipts; and a hundred other things which apply to gardening; but how to collate and arrange them, how to know whether they are bits copied from works, or purely his own, in short, how to publish them, I know not, and, therefore, give them as I found them,—as

EXTRACTS FROM THE NOTE-BOOK OF A FLORICULTURAL ENTHUSIAST.

VEGETABLE MOULD—That is, grass and leaves, and even wood, rotted into mould—is good for all flowers, and no dung need be used if you can get plenty of this. It helps their colour and strengthens their growth up to a safe point, and clean friable hazel loam is the best material to mix with it. The best stuff I ever used in my life was from some turfs cut in Copenhagen fields; they were only two inches thick, and they lay for nearly four years; accident threw them in my way, and I used

them for auriculas without a particle of any other stuff with them, and continued to do so after seeing that they did well in it.

TOP-DRESSING FOR AURICULAS.—One part pigeon's dung (three years old) to three parts of fresh soil, such as they are growing in, two parts silver sand; let these lay together: when it does not catch the rain, damp it occasionally, but do not let it be absolutely wet. This top-dressing is quite exciting enough: the longer it lays together the better. Indeed, if the pigeon's dung were quite fresh and mixed with the loam, and lay in the heap for three years to rot, it would be better than if rotted by itself and afterwards mixed.

LAUREL LEAVES.—I was recommended to use bruised laurel leaves, in frames, to kill the thrip; I accordingly bruised a quantity and put plenty of them among the pots—they killed the thrip and the plants also. From this I gather, that it is very poisonous, and that it is too dangerous to play with. I don't like such remedies.

BLOOMING CARNATIONS.—It is not enough to tie a bast round half way up the pod, but you should also, as soon as the coloured petal shows, tear down the divisions as far as the bast, so that there is no kind of check on either side. If this be not done, I find that the pod will hold together until it can resist no longer, and it gives or bursts in the weakest part, even below the tie, and destroys the bloom for showing.

AURICULA SEED.—To get a stock of any scarce sort of auricula I have cut out the heart: there appears to be a bud or two to every leaf, and a good many of them come out. The time to cut it out is the instant it shows itself by the side of the flower-stalk, and before it takes much of the strength away; it is sure to throw the shoots sooner, stronger, and better for it, and all you lose is the main plant. I used to pull off the leaves, but I found it was better to leave them on, as the leaves having made their growth could take nothing from the plant.

TO INCREASE THE TULIP.—I have cut the top half completely away to destroy the growth of the leaves, because it takes the growing part away, and thus forces the growth of any incipient buds that may be at the base of them. This applies only to such kinds as do not freely breed. Some breed a good deal too fast. I applied this to a Louis the XVI., though I gave six pounds for it, not bigger than a peach kernel, but I had tried it with common ones before. They should be cut long enough before planting to dry the cut surface, or it might mildew in the ground. My Louis threw two offsets which came nearly as large, if not quite as large, as the root I cut was; and there were several as large as pips of

apples. Mr. Millikin said once, that it was a desperate remedy, but he had known it answer.

TO PROMOTE THE GROWTH OF PLANTS.—Pick off the bloom buds as soon as you can get hold of them. Auriculas and polyantheses, offsets of hyacinths, ranunculuses, anemones, and everything else that I have tried, and nothing more than the tulip, has grown much stronger for taking off the bloom-bud. It is well to do so where the plant is scarce and the flower not wanted.

THE FLORIST'S DIRECTORY.—I think there is too much mystery in auricula growing as directed in it. I never followed it, and mine grew well in rotten turfs and nothing else. I did try some with the rotten wood taken from a hollow willow tree, but there was a good deal of bird droppings had got among it, as the top was open, and it was too strong for anything; but a little of it, mixed with plenty of ordinary soil, would do for top-dressing. The Directory which mentions willow-mould, among a great many things, reminds me of it; when it is thoroughly decomposed it is a very excellent thing for enriching a compost; and pure wood-mould will, I think, hurt nothing.

POLYANTHUSES, PRIMROSES, COWSLIPS, OX-LIPS.—All these four seem to me to be one thing, or, rather, to come from one thing. So far as I could be answerable for anything, I saved some seed entirely from a common kind of polyanthus, and I had all the four things. I could all but swear that no other seed could come among that which I gathered from, what struck me to be, a gay bastard sort of polyanthus. I have mentioned this to a botanical friend, who says it is quite possible.

RUN CARNATIONS.—Notwithstanding some people say they never come back, I have had one come as good as ever it was after four seasons' blooming as a run one. It would never be worth while to do it with a plentiful sort; but I would always lay every good or scarce one that happened to be run, for the chance of their coming back.

RANUNCULUSES.—Never let them bloom too much. My neighbour has taken up his roots very small twice, after what I call a heavy bloom: mine have come up strong both years; and I have a right to believe it is because I only allow one or, at most, two flowers to perfect themselves; all that come too forward for the Show I cut off directly; and allowing two, the most likely to suit, to perfect themselves, I take the rest off directly I can lay hold of them, so that instead of their being worse for that which would be a very prolific bloom, no more strength is exhausted than will do for two flowers, and the roots are firm, healthy, and sound: as a proof of this, a common stock-bed, that holds the surplus of a few sorts that I have a great many of growing in the same

soil, was allowed to flower as it liked, and it was a splendid and lasting bloom; but half the roots perished, and all came up very small.

LIQUID MANURE.—As my carnations came into bloom I watered them with liquid manure. I put the quantity of one pint of rotten cow-dung to ten quarts of water, and stirred it up several times. I used it the second day after it was made. I was told it would bring up the colours well, and I think it does. Put the first two quarts of water hot and let it be well stirred, then add the other eight: I used this water instead of common water all the while they were blooming, beginning just before they burst. Gabel put something else, which he would not mention, but mine was as good as his.

PIPING PINKS.—I have been laughed at because I never cut the leaves of pipings of pinks, or layers of carnations. They tell me that cuttings and layers perish through evaporation of the juices faster than they are supplied, and that the greater the surface the more this evaporation takes place. Perhaps so, but it must be as bad to cut off half the juices in the half leaves you take away, as to let them evaporate by the increased surface. But I don't believe a word about their being worse for leaving them on. How do we know that the leaves do not absorb moisture as well as give off moisture? I find they make better plants.

LABELS.—I find the best are lead or pewter, and they can be cast as easily as possible in a mould cut out of common hearth-stone. Get two squares and cut them perfectly flat on two of their faces, so as to go together close. Cut into the face of one any figure you like; make a groove from the figure to the edge of the stone, and at that place, when they are close together, open the hole the shape of a funnel, to pour the lead down. The best use you can make of the lead is to stamp figures on and refer to a book. It is a bad plan to name every thing, and you become quite as familiar with numbers as names. Sheet lead, such as they roof houses with, would do, cut into three-inch lengths, rather angularly, half an inch wide at one end, nicely pointed at the other. The advantage of figures stamped in the lead is, that nothing can obliterate them; and the advantage of casting is, that you have all uniform in size and no waste weight.

BLOOMING AURICULAS.—If an auricula receives the slightest check from the time the truss shows till the flowers are open flat, they are almost certain to be cramped—there is nothing so delicate. I would rather let them take their chance and bloom too early or too late, than change their temperature ten degrees; and when they begin to open they ought to be taken to a sheltered nook, and be

placed on a table, covering them with a hand-glass: covering them warm at nights, and shielding them from the sun by day—but all shading should be done by a wall of matting at a distance, and not by covering the glass. If you can ensure the flowers against any chill while opening, and they have not already received a check in their advancing state, they will naturally open very flat; but if they are chilled before they open flat, some of the petals will be so fixed in their crumpled state that they cannot unfold themselves and open.

OXALIS DEPPEI.

THIS species of *Oxalis* is a native of Mexico, and was introduced to this country in 1827. It is also known in some continental gardens as *O. zonata*. It appears to have attracted attention in France as an esculent about eight or nine years ago, and has been cultivated with great success in Belgium, by Professor Morren of Liege and others, and where it is highly esteemed. Almost every part of the plant is used, the flowers and leaves in salads, and the latter in soups; and as a vegetable, in the same way as sorrel. The roots, which appear to be a reservoir of food for the plants, but which do not appear to be capable of producing plants themselves, are dressed in the same way as asparagus, and are also stewed with white sauce like celery or endive. In whatever way used they are said to be very tender, nutritious, and agreeable.

The roots, under good management, may be procured from three to four inches long, and an inch and a half through. They are of a whitish, semi-transparent colour externally, white, and generally rather hollow inside, tapering gradually to the end, and furnished with a few small fibrous roots. On the crown of these roots grow a great quantity of small sealy bulbs, from which the leaves and flower-stalks rise, and by which the plant is propagated. The leaves are composed of four leaflets, each with a dark mark across them, and the flowers are bright rose-coloured. It is an ornamental plant, and has been found to answer well as an edging to shady walks, in woods, and similar places.

In order to grow the roots to their full size, a very light, rich, sandy soil must be prepared, where not naturally at hand, as it will not succeed even in loam; and on clay, even with considerable preparation, the result has proved very unsatisfactory. In such a soil as mentioned above, the sealy bulbs should be planted about the middle of April, placing them only just below the surface, in rows one foot apart, and the bulbs six inches from one another in the rows. The crop should be kept regularly watered whenever there is a deficiency of rain,

and one or two applications of manure water will be beneficial. Keep them free from weeds, and either protect them from early frosts, or take them up before the weather becomes severe enough to injure them. When lifted they should be cleaned from all leaves, and the bulbs on the crown should be taken off and preserved for a future planting; the roots should then be stored for use in the same manner as carrots and other similar crops. Many other species of *Oxalis*, perhaps nearly all the bulbous ones, produce similar secondary roots, if the term may be allowed; but none appear to attain a size to fit them for culinary purposes but the above.

As the leaves of this *Oxalis* have been used in a similar way to sorrel, as have also those of *Oxalis crenata*, (of whose roots, true tubers, great things were at one time expected,) it may be as well to mention, that *Begonia Evansiana*, or *discolor*, is also grown in stoves in Russia, especially in winter, for the same purpose. This plant, an old and favourite inhabitant of our gardens, appears to have been extensively grown at St. Petersburg and Moscow for this use, about the year 1819. It was even preferred to sorrel as an agreeable acid, and as being more tender and palatable than that vegetable. It is not likely to be grown for such a purpose here; but if it were desirable to try it, a sufficient crop could be easily grown in any vinery or forcing-house that happened to be in use.

GRIGOR ON PLANTING ROCKY AND PRECIPITOUS SCENERY.

MUCH attention has from time to time been paid to the mode in which Ornamental Plantations should be formed, and many excellent works and articles have been written on the adaptation of various trees and shrubs to certain situations. Tourists in search of the picturesque, have repeatedly described the grandeur of the dark forest-side, the beauty and elegance of Nature's drapery amidst rocks and craggy precipices; but so far as is known by the present writer, no one has set about the work of describing practically and plainly the method by which Nature can be successfully imitated in the latter respect—that is, in rude, abrupt situations, where there are steep crags, whether beside the sea, or by rivers, streams, waterfalls, cascades, or in isolated places. Ruins, too, whether real or artificial, are susceptible of embellishment in this way; and it is sometimes found that Nature has added much to their interest by planting a lone Ash or Pine tree, or some other similar object, amidst their mouldering remains. It is presumed, that every one admires rocks and ruins ornamented in this

way, and that all will feel disposed to adopt a plan by which original scenery can be so exactly imitated.

The exquisite effect which might be produced by clothing the face of crags in the immediate neighbourhood of the sea is too apparent to require explanation; but this I admit is the most difficult department of the work here alluded to. Still, it can be accomplished; and, before concluding this short paper, I shall state how it has been done successfully.

Experience teaches us, that it is of very little use leaving such places for unassisted Nature to clothe them, for her operations in this way are necessarily uncertain; and besides, endless instances might be pointed out where rocky precipices have remained ungarlished for centuries, even where the climate and locality were favourable to the growth of trees.

My plan, therefore, is to form pellets or balls of clayey or moist earth, and a little chopped straw (to make it the more adhesive) of about the size of a hen's-egg, each containing generally about a dozen seeds. Those balls are to be thrown into the interstices, or on the ledges of the rocks; and if the pellets are not made of brick-earth or a very adhesive clay, the influence of the weather will in due time dissolve them, and the seeds will germinate, the plants speedily assuming the most picturesque and striking forms.

In order that we may imitate Nature the more perfectly whilst performing this operation, I shall divide the subject into two sections,—1st, Rocks, &c., which stand at a distance from the chief seat of art, the mansion; and 2ndly, Those which are near to the mansion, and are included, it may be, within the pleasure ground, where the hand of man is everywhere recognised.

Our models for decorating the first class are to be found in craggy fastnesses of a high-land ravine, and amongst the margent drapery of the rifted precipice, such as is often seen in the north of Scotland. The trees which generally prevail there, are, the birch, alder, ash, aspen, mountain ash, elder, ivy, pine, &c. For the other class, art has appropriately set apart the pine, arbutus, rose, periwinkle, cistus, cytissus, daphne, ivy, honeysuckle, ribes, broom, rhododendron, erica, andromeda, juniper, and several others.

In the case of the birch, I may mention that they should not be enclosed in the ball of earth, for this is one of those seeds which if at all covered with mould, refuses to grow; the moistened ball should therefore be merely laid upon the seeds, and a sufficient number will attach themselves to it, to ensure a good crop wherever it may be lodged. The others

in this section may with safety be enclosed in the pellet; for, as soon as it dissolves or falls to pieces, none of the seeds will be found too deeply buried to prevent germination. The same remark will apply to those of the other section; and I think that instead of seeds of the periwinkle, small cuttings might be advantageously inserted in the ball of earth. On this particular point, however, my experience does not enable me to speak confidently.

With regard to the manner in which those trees and shrubs, or the germs of them, should be distributed, Nature has not left us in doubt. The birch trees should be in groups, not of a formal thickness, but so varied as not to end in a body, or abruptly, but slightly intermixed with plants adjoining; and it is highly desirable to have their light pensile spray immediately contrasted with the sombre and persistent foliage of the pine. It is better, again, to have the pine higher up than the birch, because the former is hardier than the latter, and more able to contend with the elements: besides, it would be preposterous to have the hanging foliage of the birch resting upon any other ligneous object under it. The finest rock scenery in Britain is to be found on the banks of the Findhorn, a deep and rapid river in the north of Scotland, passing the town of Forres on its way to the ocean. In still weather, and amidst broad sunshine, the picture viewed from a prominent point, is like some gorgeous delineation on canvass; but when a gleam of sunshine comes to light it up, at a time when the heavens are otherwise darkened, the chequered appearance of the scene becomes doubly attractive. Nearest to the water, are birches with very pendant masses of branches descending into the water; over them, the aspen and pine have their slippery-looking, though secure, abode—the latter boldly throwing out its varnished-like arms, the same as if it were on the broad mountain top. Behind, on a lofty recess, are masses of oaks, and, to crown all, the pine again commences, and the long and lofty vista is terminated with its dark-some umbrage.

In clothing rocky scenery, therefore, it would be well to imitate, as far as possible, the models which Nature has given us. In cases where rocks or precipitous places are in the neighbourhood of the sea, a particular selection of plants, or the seeds of them, requires to be made. The elder is very suitable, and it grows remarkably well from seeds. The common goat willow is also a plentiful bearer of seeds, and it withstands the sea breezes better than most trees. The *Pinus Pinaster* minor should likewise be tried, together with the common Broom. All these may be inserted in pellets and lodged on the ledges of the rocks during the first week in May. When these have

created a partial shelter, the weeping birch should be introduced; for of all trees none is so ornamental on the face of rocks.

In such of the counties of Britain as possess the proper features for the improvement suggested, I sincerely hope the plan here recommended will have a fair trial. No one will deny that the beauty of many localities might be very much heightened by having the bare rocks partially covered; for of all the elements which the landscape-gardener has to deal with, I believe that of rocks is the most grand and striking.

In prosecuting this work many will be discouraged by the slowness with which the trees appear. Let such remember that even under the most favourable circumstances, years must elapse before a seed will produce a plant of a conspicuous size. I have always found it a good plan to confine one's operations to a small space, to fill that space properly with seeds, so that the young trees may rise very close to each other. After a few individual trees are fairly established, and of a mature age, the wind and birds will aid in disseminating the seeds, from which, in due time, abundance of trees will spring.

THE CYTISUS.

(HARDY SHRUBBY SPECIES.)

THE family of *Cytisus* is a handsome one, belonging to the natural order of Leguminaceæ, and to the Linnean *Monadelphia Decandria*. It is named from *Cythus*, one of the *Cyclades*, the first known species having been found there. It has butterfly-shaped flowers, and is nearly allied to the *Genista*.

CYTISUS ALBIDUS (the whitish *Cytisus*), is an erect growing deciduous shrub, with oblong leaflets, and white axillary flowers, usually in threes. It is a native of the south of Europe, and north of America. Flowers in June.

CYTISUS ALBUS (the Portugal Broom), is a very ornamental upright growing deciduous shrub, the twiggy branches of which are densely covered with handsome white flowers in May: the leaves are trifoliolate. It grows very rapidly, growing five or six feet in three or four years; and in double that time reaching twelve, fifteen, or even twenty feet. It is one of the most singularly beautiful of the hardy shrubs which flower at the early period of the year. A variety called *incarnatus*, has the flowers flesh coloured, or very slightly tinged with reddish purple.

CYTISUS ARGENTUS, (the silvery *Cytisus*), is a decumbent, silky, silvery-looking shrub, with trifoliolate leaves, and yellow flowers produced in July. It is a native of the south of France, Carniola, and Mauritania.

CYTISUS AUSTRIACUS (the Austrian *Cytisus*), is an upright growing shrub. It has round

twiggy branches, with trifoliolate leaves, and yellow flowers produced from July to September. It grows from two to four feet high; and is found in Austria, Upper Italy, Siberia, and the Ukraine.

CYTISUS BIFLORUS (the two-flowered *Cytisus*), is a native of Austria, Tauria, and Siberia. It is a diffuse growing plant, with trifoliolate leaves, and yellow flowers, in pairs. Two varieties of this, *glaber*, and *subspinescens*, have the branches respectively glabrous or smooth, and hoary, somewhat spinescent.

CYTISUS CALYCINUS (the large calyxed *Cytisus*), is a prostrate shrub, with trifoliolate leaves, and terminal racemes of yellow flowers produced in August. The ends of the shoots grow upright. It is found in stony places on Mount Caucasus.

CYTISUS CAPITATUS (the headed flowered *Cytisus*), is an upright growing shrub, from two to four feet high, with trifoliolate leaves, and numerous yellow flowers produced in June and July. It is found in Austria, Italy, and Burgundy.

CYTISUS CILIATUS (the ciliated, or fringe-podded *Cytisus*), is an upright shrub, of from two to four feet in height, with trifoliolate leaves, and yellow flowers borne in June and July. A native of the Carpathian mountains.

CYTISUS ELONGATUS (the elongated *Cytisus*), is an erect growing shrub, three or four feet high, with trifoliolate leaves, and yellow flowers produced mostly in fours. They open in May and June. A native of Hungary.

CYTISUS FALCATUS (the sickle-podded *Cytisus*), is a spreading shrub, from two to four feet high, with trifoliolate leaves, and yellow flowers produced from June to August. A native of the south of Russia, Croatia, and Galicia.

CYTISUS GRANDIFLORUS (the great-flowered *Cytisus*), is a shrub growing three or four feet high, with simple and trifoliolate leaves, and bearing yellow flowers in June and July. It grows in Portugal.

CYTISUS HIRSUTUS (the hairy *Cytisus*), is a decumbent shrub, with trifoliolate leaves, and yellow flowers from June to August. It is found in rugged places in the south of Europe.

CYTISUS LANIGERUS (the woolly *Cytisus*), is an erect shrub, from two to three feet high, with spiny branches, trifoliolate leaves, and yellow flowers; there is a variety called *rigidus*, which has stronger spines. It flowers in June and July. Both these are probably varieties of *C. spinosus*.

CYTISUS LEUCANTHUS (the whitish flowered *Cytisus*), is an erect twiggy shrub, of three or four feet, with trifoliolate leaves, and yellowish white flowers at the points of the shoots. It is an ornamental species, flowering in June and July. From the woods of Croatia.

CYTISUS MOLLIS (the soft *Cytisus*), grows

three or four feet high, and bears yellow flowers in June and July.

CYTISUS MULTIFLORUS (the many-flowered *Cytisus*), is an erect growing species, reaching two and three feet high, with trifoliolate leaves, and yellow flowers produced in May and June. Native of Europe.

CYTISUS NANUS (the dwarf *Cytisus*), is a beautiful little procumbent shrub, flowering in June and July, with trifoliolate leaves and yellow flowers. It flowers in May and June, and often continues blooming through July. A native of the Levant. If planted in sandy soil, among rockwork or between large stones, it will grow very freely, and bloom in profusion.

CYTISUS NIGRICANS (the black *Cytisus*), is a compact growing twiggy shrub, growing from three to five feet high, and flowering freely in June and July. The leaves are trifoliolate and the flowers yellow. It is very commonly planted in ornamental shrubberies, for which it is well suited. Native of Piedmont and Bohemia. The familiar name "black" *Cytisus*, and the Latin specific title, *nigricans*, which gives rise to it, refer to a property which the plant possesses of turning black in drying.

CYTISUS ORIENTALIS (the Oriental or Eastern *Cytisus*), grows erect, to the height of three feet, and has trifoliolate leaves; its yellow flowers are produced in June and July. Native of the Levant.

CYTISUS PATENS (the spreading *Cytisus*), grows from four to six feet high, with yellow flowers, in June and July. A handsome tree when grafted standard high.

CYTISUS POLYTRICHUS (the many-haired *Cytisus*), is a small declinate plant of two or three feet in height, with trifoliolate leaves and yellow flowers, which are produced in June and July. It is from the mountains of Tauria.

CYTISUS PURPUREUS (the purple flowered *Cytisus*), is a very pretty dwarf shrub with procumbent branches, rarely rising more than a foot above the surface. It has trifoliolate leaves and dull purple flowers, which open from May to August. There is a white flowered variety, called *flore albo*; it is a native of Austria. This species is well suited for rock-work, and also forms a beautiful small standard when grafted on the laburnum. The plant once known as the "Scarlet Laburnum," but which in reality has dull purplish flowers, is evidently intermediate between *C. purpureus* and *C. Laburnum*; for it is no unusual thing to see a branch of the true *C. purpureus* put forth from a plant of the Scarlet Laburnum, (properly *C. Laburnum Adamicus*), which had been grafted on the common Laburnum, and with which *C. purpureus* had had no contact. It is not clearly known whether *C. Adamicus* may be a hybrid between the two, or whether the sap of *C.*

purpureus, when grafted on the Laburnum, may have united in some mysterious way with that of the Laburnum, and so given rise to it in the character of a "sport," which has been rendered permanent. This latter supposition seems to be favoured by the fact alluded to above, that plants of the scarlet or purple Laburnum sometimes put forth perfect shoots both of *C. purpureus* and *C. Laburnum*. Whatever may be its origin, this *Cytisus Adamicus*, or purple Laburnum, a tree with the habit of the common Laburnum, is infinitely inferior in beauty to either the common Laburnum or the purple *Cytisus*, to which it owes its origin.

CYTISUS PYGMEUS (the pigmy *Cytisus*), is a procumbent species from Galicia, with trifoliolate leaves and yellow flowers, in June.

CYTISUS SCOPARIUS (the common Broom), is, as the name implies, a very common shrub; but it is also one of very great beauty. It is a diffuse growing twiggy bush, attaining from three to six, or even ten and twelve, feet high, according to soil and situation. The branches are smooth and angled, the leaves trifoliolate, the flowers large and yellow. It is very common on sandy and gravelly soils throughout Europe. There are two varieties: one called *pallidus*, or *albus*, which has pale straw-coloured flowers; the other *flore-pleno*, with flowers slightly double.

CYTISUS SESSILIFOLIUS (the sessile-leaved *Cytisus*), is an upright growing shrub, with trifoliolate leaves and yellow flowers. It is a species very generally cultivated in gardens, where it forms a bush from four to six feet high, flowering in May and June. It is a native of the South of France and Piedmont.

CYTISUS SPINOSUS (the spiny *Cytisus*), is a small shrub from the South of Europe, from three to four feet high. It has trifoliolate leaves, and bears yellow flowers in June and July.

CYTISUS SUPINUS, (the supine *Cytisus*), is a decumbent shrub, with pale yellow flowers and trifoliolate leaves. It is a native of various parts of the South of Europe, and produces flowers from May to August.

CYTISUS TRIFOLIUS (the three-flowered *Cytisus*), is a straggling growing shrub, attaining three or four feet high, and producing yellow flowers in June and July. It is a native of the South of France, Italy, &c.

CYTISUS WELDENII (Welden's *Cytisus*), is an upright growing shrub of four or five feet high, with fragrant yellow flowers borne in June and July: they are produced in terminal racemes. The leaves are trifoliolate. It is a native of Dalmatia.

Like the species of *Genista*, to which the family of *Cytisus* is very nearly allied, they are well suited for ornamental purposes. The upright growing species are suitable for plant-

ing either singly or in groups, towards the front part of shrubberies, or in groups or small beds detached from surrounding plants. The procumbent and spreading species, again, are suitable either to plant near the extreme boundary of shrubberies or clumps of shrubs, or they may be placed on rock-work, or on dry elevated banks, or in any situations where loose stones can be collected around them. Any of the smaller, compact growing, upright kinds, or the procumbent ones, may be grafted standard high on the Laburnum, (which is a species of *Cytisus*), and will thus form handsome ornamental specimen plants for planting out on lawns, or in the more prominent positions among other plants. *C. scoparius*, the common Broom, is also well suited for planting extensively on waste sandy land as a cover for game; and, in company with the furze, it is calculated to convert the dreary and barren waste into a garden of vegetable gold. It may also be used as a hedge plant in situations where it may be abundant, and where other plants would not thrive well, such as those referred to above.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURAL AND NATURAL HISTORY.

AUTHORITIES.—*Journal of Horticultural Society*, J. H. S.—*Gardener's Gazette*, G. G.—*Gardener's Chronicle*, G. C.—*Gardener's Journal*, G. J.—Quotations from which are duly acknowledged by the respective initials attached to each.

REPORT ON EXPERIMENTS WITH MANURES.

By J. DONALD in J. H. S.—"*Phosphates*." To ascertain the effects of phosphates in different sorts of soil on the *Calluna vulgaris*, nine plants were potted in Bagshot peat, nine in Wimbledon peat, nine in Bromley peat, nine in Norwood loam, nine in Hanwell loam, and nine in common garden soil. Two plants in each sort of soil received nothing but water when they required it; the others, a small quantity of the following substances: phosphate of soda, phosphate of iron, phosphate of magnesia, and cow-dung. No perceivable change was caused by the substances. The only difference appears to have arisen from the different sorts of soil. Those in Bagshot peat and those in Norwood loam were the best; those in Hanwell loam next; those in Bromley and Wimbledon peat next; and those in common garden soil the worst.

"*Rhododendrons*, treated with various salts.—Of 30 plants four were planted in peat, three in loam with a mixture of cow-dung; all the others in loam, 15 receiving the following substances: phosphate of iron, phosphate of soda, ammonio-phosphate of magnesia, sulphate of iron, and oxide of iron. Each of these substances was given to three plants in the proportions of 1 oz., $\frac{2}{3}$ oz., and $\frac{1}{4}$ oz., one half in autumn, the other in spring. The

other eight plants received nothing but water when they required it. Those that received ammonio-phosphate of magnesia were much darker in colour than the others, in which little change took place. Eventually it was found that those plants which received ammonio-phosphate of magnesia were decidedly the best, especially the plant which had 1 oz. Those that received oxide of iron and those in peat were much the same, and decidedly the worst. Those in a mixture of loam and cow-dung and those treated with phosphate of iron, phosphate of soda, sulphate of iron, and pure loam, were much alike, and quite intermediate between those that received ammonio-phosphate of magnesia and oxide of iron.

"Hydrangeas."—The plants under experiment were nine in number, all potted in one sort of soil, and all in the same sized pots (6 in.) To eight of those a small quantity of the following substances was given: phosphate of iron, sulphate of iron, alum, caustic potash, phosphate of magnesia, and carbonate of potash. The plant which received $\frac{1}{4}$ oz. carbonate of potash died, also one which received $\frac{1}{2}$ oz. of phosphate of iron and 3 oz. of alum. The plant in pure soil produced large healthy leaves, and a stem 2 feet 6 inches in height, terminated with two large masses of flowers. That in $\frac{1}{2}$ oz. phosphate of iron was 15 inches high, with leaves little more than half the usual size, petals considerably smaller but of the same colour, and flowers in great profusion. That in $\frac{5}{4}$ oz. of phosphate of iron was not different from the last. The plant in $\frac{1}{2}$ oz. of sulphate of iron was 11 inches high, its leaves green and healthy, its petals rather smaller than their usual size, heads dense, and large in proportion to the size of the plant, but no change in their colours. The plant treated with $\frac{1}{2}$ oz. of alum was 9 inches high, had leaves about half their usual size, petals in proportion, which were of a *pale blue colour*, and numerous branches, all terminated with dense masses of flowers. This plant stood in the conservatory seven weeks in bloom: $\frac{1}{2}$ oz. caustic potash formed a plant 2 feet high, very similar to those which received phosphate of iron; $\frac{1}{2}$ oz. phosphate of magnesia produced a plant 8 inches high, with leaves yellow all the season; the flowers were small, and dropped off as soon as they expanded."

REPORT ON NEW PEAS. By R. THOMPSON, in J^l. H. S.—*"Adamson's New Matchless Pea."*—Obtained from Mr. Glendinning, Chiswick Nursery, Turnham-green. A sort of white Marrow, an abundant bearer, growing about 6 feet high. Pods large, flat, approaching the shape of the Scimitar pea, generally a little rough outside. Seeds 6 or 7. Requires a distance of 4 feet between the rows. A variety of excellent quality.

"New Indented Marrow Pea."—Also obtained from Mr. Glendinning. A sort of green Marrow, rather tall, but not so strongly growing as Knight's. Pods flattish, with about 6 large green seeds of sugary quality. Should be sown 3 or 4 feet between the rows. Unquestionably a good variety; but further trial is necessary for comparison of its merits with those possessed by Knight's Marrow.

"Pois à Cosse Jaune."—Obtained from M. Vilmorin, of Paris. A sort of sugar pea, the pods of which are used in the way of French beans. About 5 feet high. Calyx and pods yellow; the latter rather large, flat, somewhat pointed but not hooked, generally much curved, one side being convex and the other concave, tender, without a tough lining. Seeds 5 to 7, and may be counted without opening the pod, in consequence of the latter collapsing closely round them, so that in swelling, corresponding projections are formed outside. The same mode of cultivation is required as is proper for other peas of a similar height. Curious, on account of the yellow colour of the pods; but, like other sugar peas, not likely to be thought very useful in this country.

"Dancer's Monastery Pea."—This was presented to the Society by Mr. Dancer, nurseryman, Fulham, who states that he obtained it from a gentleman who procured it in Italy where it was cultivated at a monastery, and hence its name. It is a fine strong-growing variety, 6 or 7 feet high, bearing a succession of very large pods, rather flattened, somewhat resembling those of the white Marrow, containing 7 or 8 large seeds. It is later than the Auvergne; becomes fit for use about the same time as the Scimitar, sown the same day. As it grows strong and tall, it should not be sown at less than 4 feet between the rows; nor should the peas be too thickly sown in the rows. It is an excellent variety as regards productiveness, size, and quality."

ANTIRRHINUMS.—These flowers are now striking out into a variety of stripes and blotches, greatly superior to the ordinary purple kind, and forming pretty companions for *A. pictum*. Mr. Burton, of the Wandsworth Road, has been very successful, and some of these have been picked out to name, and sent out as distinct things. How far this can be esteemed as a florist's flower we know not; the only question with us is, whether any subject which has not all its flowers of a distinctive character can be safely reckoned upon as a florist's flower. The Antirrhinum, for instance, has a spike of flowers variously striped,—some will be with broad stripes of colour, leaving hardly any white; others with very narrow stripes of colour, and nearly all white, and all the intermediate quantities of

colour; the only thing that would be taken as distinct, would be the shade or colour which is upon the white, and the form of the flower, which is not much calculated for the display of proportions at present, but can never be depended on for consistency; on this account the plant can never bear a large price.

NEW AURICULAS.—At the exhibition of the Royal South London Floricultural Society, Mr. James Dickson, of Acre Lane, Brixton, exhibited three seedlings which appear likely to take a position among the show flowers. Their names were—Lady Sale (to which a first class certificate was given), Duchess of Wellington, and Sir R. Sale: they were of the grey-edged class. This being the first time they have made their appearance in public, we will not enter into any detail respecting them, as they will require to be looked after next season, in order to learn if they keep up to the position they promise to take. We may add, that Mr. Dickson is a very successful raiser and cultivator of Auriculas. There was another seedling, called Sophia, exhibited by J. Chapman, Esq.; this was rather a small flower, also grey-edged, but did not strike us as being so good as Mr. Dickson's; a first-class certificate was, however, given to it, so that the judges must have regarded it as a promising flower.

IMPORTED ORCHIDS.—It is not a good plan, generally, to submit plants which have been recently imported, and which are always in a dry and shrivelled condition, to the heat and moisture of the ordinary growing-house for the plants. Neither should they be potted, nor have any water applied directly to them. They ought simply to be laid out in a house somewhat warmer and moister than a greenhouse, such as is used for resting orchids; and if allowed to remain here till they show signs of growth, and are then potted, and removed to the warmer house, but not too liberally watered, they will much more successfully be brought to a healthy thriving state. While spread out in the cooler house, the only application of moisture which should be indulged in, is to very lightly syringe over them when the sun is very hot, and the atmosphere, in consequence, very dry; but of course they should be lightly shaded when watered under these circumstances. Sometimes, if the plants have suffered but little on their journey, they may be plunged in moss, kept damp, and placed over a flue or hot-water pipe; but this is in general too exciting a course of treatment.—*G. J.*

BLUE HYDRANGEAS.—My opinion is, that any soil will change Hydrangeas to blue, more or less: that is to say, if it has never been under cultivation. I have drawn my opinions from the following facts, than which I must say, nothing can better illustrate this freak of

nature. My stock of plants were all taken from *one parent*, and they were all rose-coloured when grown in pots. After growing for two successive years, they were turned out into different parts of the flower-garden, which consists of different sorts of soil; and all those that were turned out where the soil was of a fertile nature, kept to the original colour, but those that were planted in peat, produced blue flowers, and one that produced them of the finest blue I had ever seen, was planted in a red tenacious clay, mixed with what is termed iron mould. The plant certainly was a little screened from the hot sun, which might add to its colour. The most satisfactory instance of the whole, was in the case of a plant that flowered for three or four years after being planted out in the border, and always true to the original colour; but as we had occasion to make a small piece of rock-work close to it, a mound of Epping-forest loam, placed there for the purpose of supporting the rock-work and growing the plants, came in close contact with the stems of the plant. After a year or so, the roots of the hydrangea worked its way into this loam, and the consequence was, that the side of the plant nearest to the rock-work produced blue flowers, while the other side continued to bear them of the original rose colour, and this has occurred for four or five years; last year I had no flowers, as they were all cut down by the severity of the season. I intend this year growing some of the *Hydrangea japonica* in peat, to see the effect on that species. I hope that these instances of what seems a mystery to our limited senses, will be of some use in throwing light on this subject. The *whys* and the *wherefores* cannot alter the facts before our eyes. That there is a cause, no person can doubt; but I leave this subject for some one more able than myself to grapple with.—*John Kyle.*—*G. J.*

SIBTHORPIA EUROPEA.—The introduction of this plant as a covering for the peat, moss, &c. necessarily employed in the cultivation of many species of orchids, would be a valuable acquisition, its small green leaves and compact creeping habit admirably adapting it to such a purpose. Instead, therefore, of the disagreeable appearance of dead sphagnum, which meets the eye in all directions, the spectator would look with pleasure on this little native of our favourite isle, rambling with modest and delicate luxuriance amongst, and giving additional loveliness to, its nobler tropical acquaintance.—*G. C.*

EPACRIS ATLEEANA.—This is one of the most beautiful of the family. It is, in the form of the flower, approximating to *grandiflora* and *miniata*, but the colour is a fawn, with white tips, the bloom abundant, the habit much the same as the best of the genus. It is a fine addition to the family of *Epacris*.



Interior of the Duke of Devonshire's Conservatory at Chatsworth.

GARDENING CALENDAR FOR JULY.

THE CONSERVATORY.

DURING the present month, the practice of allowing perfect ventilation and shading the plants must be continued, as directed at p.207. The climbing plants must have their young growing shoots attended to; and plants in bloom must get a good supply of water. In order to afford the plants a period of rest, the house should be kept as cool as possible now, since during the more ordinary season of repose, that is, in winter, this house should be kept rather warm and close, being then made the receptacle for a variety of gay plants.

Japan Lilies.—(See p. 102.) These will now be rapidly progressing in growth. When the practice of keeping the conservatory perfectly ventilated is adopted, they may stand in this house; but if it is kept more close, they will be better either out of doors, or in frames, until they advance nearer a flowering state. A little clear manure water will suit them while in this state of growth: it may be given once a week at first, then increased to three times a week, or every alternate watering, if not too strong.

Achimenes, &c.—A few plants of these may be raised from cuttings, for flowering in autumn. The best species for this purpose are *A. longiflora*, *A. picta*, and *A. pedunculata*. Prepare a supply of plants of the shrubby *Gesneras*, such as *G. oblongata*.

Scarlet Pelargoniums.—A few large plants,

grown on purpose, have a very fine effect at this season of the year. Remove them here from the house, or the frames where they have been grown, when they are nicely in flower, and remove the decaying flowers. Some of the larger ones should be chosen, such as *Smith's Emperor*, which, with several others, bears immense bunches of bloom.

Annuals.—In order to assist in keeping up a display of flowers through the autumn, a few of the best free-flowering showy annuals may be sown early this month, and grown in pots, in cool frames or pits, for removal when in flower. Sow them in wide, shallow pots, or in boxes; and prick them out an inch or two apart in light rich soil, as soon as they can be handled: when they have formed two or three pairs of leaves, pot them either singly, or two or three together, according to their habit. Choose those with distinct colours; they have a much better effect than undecided colours. We should select such as *Nemophila insignis grandiflora* (blue), *Tagetes tenuifolia* (orange), *Ageratum mexicanum* (pale blue), *Collinsia grandiflora* (white and lilac), *Phlox Drummondii* (crimson), *Tropæolum minus* (orange), and *Reseda odorata*; though there are, of course, many others that might be chosen. Some of the tender annuals, such as the *Balsams*, *Cockscombs*, &c., will also, of course, be removed here, in order to assist in keep-

ing up a display of flowers. The different Indian balsams are exceedingly well suited for this purpose, and may be grown into splendid specimens. Their treatment may be found detailed at p. 493 of the *Annals of Horticulture*.

Chrysanthemums.—Much of the autumnal display of a conservatory depends on a supply of these plants; and, indeed, through the earlier part of the winter they maintain their ground, if managed with that view. Not that these are the only flowers which can be had at that time of the year, for by the aid of forcing, almost any kind of plant may, if required, be brought to bloom in winter; but *Chrysanthemums* are peculiarly autumnal flowers, and though they want an agreeable fragrance, they are very showy; besides, they have a degree of freshness and distinctness from the summer flowers, with which at that season one has been most familiar, which is an additional recommendation. The potting of the plants should be attended to, and, above all, the watering of them, so that they may retain their foliage in a healthy state. If they have been planted out, with a view to taking them up for potting towards the autumn, it will be advisable occasionally to thrust a spade down all round them, at a little distance from the stem, beginning, perhaps, at six inches, and increasing the distance very slightly each time. This will moderate their growth, as it will act as a gradual and not sudden check, and will cause them to grow dwarfer and more bushy. For the same purpose, the strongest shoots should be occasionally topped.

THE GREEN-HOUSE.

Green-house plants will now, for the most part, be removed for their ordinary habitations, which will afford accommodation for the growth of tender annuals, such as the various *Impatiens*, *Globe amaranths*, *Cockscombs*, *Egg-plants*, *Browallias*, &c.; and also for many stove plants, which may be removed here for the summer with great convenience. When the green-houses are thus employed, their management as regards temperature, moisture, and ventilation, must be assimilated with that of the plant stove, for which see p. 253. The tenderer of the green-house plants will be removed into cool pits, well ventilated, which offer the best of all situations for growing them in the summer. The more hardy and robust kinds should be placed in any convenient and appropriate situation out of doors, till the middle of September, or later, if the autumn proves fine.

HOUSE FOR MISCELLANEOUS PLANTS.—This structure may in a great measure be devoted to the purpose just named, that is, the growth of tender annuals and stove

plants, such as *Achimenes*, *Gloxinias*, and also many of the hardier of the stove shrubs, while they are making their growth. When used for this purpose, the house should, as above remarked, be subjected to the general management of the stove, but may be kept somewhat—that is a few degrees—cooler. If the house is not devoted to this purpose, it may very properly be used in preparing plants for late blooming in the conservatory; these, however, may be quite as successfully grown and prepared in pits; and such consist of *Salvias*, *Heliotropes*, *Pelargoniums*, shrubby *Calceolarias*, *Coronillas*, *Siphocampylos bicolor*, *China*, *Hybrid China*, and *Tea-scented roses*, &c. &c. These plants, whether grown in the house or in pits, require as free ventilation as can be given, and to have the atmosphere about them kept moderately damp, by giving the walls, paths, pots, &c., frequent gentle sprinklings with the syringe.

Primulas.—These plants are scarcely equalled for usefulness and for gaiety during the winter months, especially the double varieties, white and purple. Seeds of the ordinary varieties, both plain and fringed, may be sown now, for a stock of plants to bloom next winter. The double ones, which do not produce seeds, should now also be propagated by division; cuttings of them may also be planted. In dividing them, take the old plants, and separate them into as many pieces as there are single hearts, or shoots, and get as many of the old roots attached to each division as possible: those pieces to which no roots can be obtained, must be planted as cuttings, and will root readily enough if kept close for a time. Pot the others in light soil, composed of equal parts of sandy loam and peat, and place them in a hot-bed, where they will get a gentle bottom heat. When they are rooted freely, shift them into large pots, and place them in an ordinary green-house, not exposing them too suddenly: pick off all the blooms that appear. In October, shift them into their blooming-pots, which may be six or eight inches in diameter, according to the size of the plant, and the convenience for growing it; they must not have *too large* pots for the quantity of roots they possess, and must be well drained. They will begin to bloom in November, and will continue for several months in succession. After blooming, rest them till the following July.

Tropaeolums.—When these have done flowering, and begin to show symptoms of decay in their foliage, dry them off gradually by withholding water. Keep the roots in a dry place,—beneath the plant-stage in the green-house is a good place, if it be dry, and not subject to drip. Keep them at rest, till the spring, if you can; but if they begin to

grow in the autumn, they must be potted and grown on in the geranium-house.

Coronillas, and other plants, as *Salvias*, *Cinerarias*, &c., for flowering in the winter, should be shifted now, and have all the flowers picked off before they expand,—in fact, as soon as they appear.

HEATH-HOUSE.—All the plants in this house,—both *Heaths*, *New Holland*, and *Cape* plants, will do as well or better in the cool pits than any where else ; and their treatment may be summed up thus :—pot all such as manifest signs of growth ; in fact, all that have not been potted before during this season will require it now, and many of the free-growing ones also, that were potted in spring. In watering, take care that the soil *never gets dry*, and if the pots are properly drained, plentiful watering will not make it too wet. Give them free air, both beneath the platform they stand on (see p. 4), and about the tops, but shade them in bright sunshine. The same treatment must be given if they are kept in the house, only the shading is then still more urgent. If the plants are removed to the pits, the house may be temporarily filled with other things. It is only the more delicate kinds that *require* to be now kept in-doors: the larger and more hardy of the plants may be placed out-doors, in a shady situation, on a good bed of coal-ashes, to keep down the worms ; but they should be provided with some light covering, such as the waterproof canvass, to let down so as to shelter them in stormy weather, and when the nights are cold. Specimen plants must be nursed along with all the care bestowed on an infant.

CAMELLIA-HOUSE.—*Camellias*.—The growth of the *Camellias* will now be getting matured, and when this is the case, they will be benefited by being removed to a sheltered and protected situation out of doors for a month or two, after being hardened off in a cooler house than that which they made their growth in. The very small plants had better not be exposed, but should either be kept in the house, or in pits. The house may now be kept cooler than has been previously recommended, unless, for any particular purpose, such as propagation, or inducing late growth in any of the plants, it may be desirable to keep it to a moderate warmth. The warmth will be, of course, regulated by the amount of ventilation. When kept tolerably close and moist, this house is a good nursery for sickly plants, or for growing young or tender ones. Refer to the general management already recommended. When the plants are setting their blossom-buds, give them clear diluted manure water.

Azaleas and other plants, kept in this house, must be managed in a similar manner.

PELARGONIUM-HOUSE. — *Pelargoniums*.—

Attention to ventilation, so that there is a free interchange of air, without producing cold draughts,—shading whenever the sun is clear and strong ; watering regularly and liberally, —occasionally with clear manure water ; removing the decaying flowers, and cutting down the earlier blooming plants, both for the purpose of obtaining a supply of cuttings for propagation, and also so that the plants may bloom again later in the season,—these are the principal routine matters that require to be attended to. The plants must have abundance of air.

Seedlings.—Where it is intended to raise seedlings, proper precautions should be taken to ensure seed which is likely to produce something worth the trouble of rearing the plants : this is done by carefully impregnating the pistil of one flower possessing the basis of good properties, with the pollen from another flower possessing some desirable quality, such as colour or marking, absent in the other. After impregnation, the flower should be loosely tied over with gauze to prevent the interference of insects. Not more than one flower on a truss, nor, indeed, more than one on a plant, should be allowed to produce seed, so that all the energies of the plant may be directed to that one. Sow the seeds as soon as they are ripe, and treat the young plants the same as cuttings. If sown early, and grown to some size in the autumn, they will flower well in the next spring and summer.

Old Plants.—Plants which are now going out of bloom, or in which the best of the bloom is past, should be cut down. These plants, if properly managed, will come into flower during the autumn or winter, if required to do so, or at any rate will make larger and earlier flowering plants for next spring, than such as are cut down at a later period of the year. They will also furnish a plentiful supply of cuttings, which should be put in to form the main stock of young plants. After the plants are cut down—they should be cut down unsparingly—reduced to mere stumps, if close, bushy plants are valued—keep them *comparatively dry*, for as there will be no call on the resources of the plant by exhalation from the leaves, so the roots will be comparatively inactive, and, in consequence, an abundant supply of water at the root, instead of benefiting them, would do them considerable injury. They may be placed in a sheltered situation out of doors, which is better for them than keeping them confined at all, and they break with more vigour, but they ought to be protected from heavy rains. As soon as the plants have shot out from half an inch to an inch in length, the young shoots should be thinned a little if at all numerous, as they usually are ; and eventually, as they get a

little more strength, all that are not required to form a head should be taken off. Remove all that grow towards the centre, so that it may be kept open, and retain the best placed shoots which grow outwards, at as equal distances as possible. Before they are far advanced they should be repotted into smaller pots. The former mass of earth must be nearly removed from among the roots, and the roots themselves thinned, and cut in rather severely. A plant that has grown in an eight-inch pot may be reduced so as to get it into a five-inch one; and a plant from a six-inch pot may be put in a three-inch one, and so on. This may be taken as a rough guide, but the strength of the plant and the number of the roots are the only proper guides in this respect. Pot the plants in a light loamy soil, of rather sandy texture, and be sure drain them well. After repotting, they must be very cautiously watered for some time, until they begin to grow freely. A cool pit or frame is the best place for them henceforward until they are moved into the house, in the autumn.

Culceolarias.—Encourage the growth of the young shoots for the purpose of propagation: they need not be made to acquire very much vigour, but just keep them in a clean healthy state; and by having the plants in a cool frame they will be prevented, in great measure, from running up to flower, which is objectionable so far as propagation is concerned. As the plants go out of bloom, cut off the flower-stalks, renew the surface of the soil, and keep them regularly watered with the view of inducing a growth of young shoots for cuttings. This applies specially to those distinguished as half-shrubby varieties: those of decided shrubby habit generally furnish cuttings enough without difficulty.

Cinerarias.—Separate and pot another batch of suckers of the different varieties of these plants, to flower in succession after those previously prepared. The latter should be potted occasionally as they progress in growth. A little attention in securing successional plants will secure a display of these flowers all through the winter and spring; and no flower is better adapted for ornamenting green-houses, or for cutting for bouquets. Cool pits are the best places for them in summer; and if frost can be kept out, in winter too.

Fuchsias.—Probably these are, by this time, in pots as large as may be convenient; if so, and they are either in full bloom, or approaching that state, supply them with clear diluted liquid manure, every alternate watering. If they are later, give them another shift. Propagate such kinds as may happen to give satisfaction: for our parts we think the old-fashioned species, such as *F. coccinea*, *gracilis*, *globosa*, *virgata*, *macrostemma*, &c., more beautiful than

the new-fashioned dull-coloured hybrids. *F. corymbiflora* is a grand plant, when there is space to grow it large; so is *F. fulgens grandiflora*, and *F. serratifolia*, but they are not suitable for growing as small bushes. In the latter character, two or three of the old kinds of small growth, are very beautiful when nicely managed; these are, *F. microphylla*, *reflexa*, *cylindracea*, *thymifolia*, &c. Shift on some of the younger plants to furnish blooming specimens later in the season.

THE PLANT STOVE.

Many of the plants may be removed to the green-house, and this will give more space for those that remain; let them have the full advantage of it by placing them thinly, in order that they may get as much light as possible in every part.

Temperature, &c.—Keep up a strong moist heat—on an average 60 degrees by day, and 65 to 70 degrees at night—which may be done by closing the house in the afternoon, while the sun shines on it, and keeping the walls and floors, &c. continually moist. Admit fresh air in the earlier part of the day: the directions at p. 253 may also be referred to with advantage.

Watering.—As a matter of course this operation must be carefully attended to, but at this season the plants require a liberal supply. The stronger kinds may get a little manure water once a week. Where any of the bulbous or tuberous rooted plants are approaching maturity, let the supply of water be gradually lessened, and when the leaves are become yellow, it may be quite—or almost entirely—suspended.

Potting and Pruning may be continued when necessary: in particular let that modification of the latter called “stopping,” which is, pinching out the points of the shoots when young, be closely followed up to secure bushy plants.

Red Spider and other insects, such as the *Thrip*, are apt to be troublesome when the weather gets hot. The best preventive is a hot moist atmosphere, which is also best for the plants; it is a hot dry air that encourages them. Syringing with clear soot water is said to dislodge them; and sulphur vivum, smeared on the pipes or walls where the sun will reach it, also raises an effluvium which is distasteful to them.

Luculias.—Discontinue stopping the young shoots of these when heads of flowers are wanted, as they will hardly flower at all, or very weakly, if this is longer continued. The plants may be taken to the green-house.

Ixora, and many similar stove shrubs, may be propagated by cuttings, which will take root if planted in sandy soil, and placed in moist heat.

Amaryllis.—The plants that are required for early flowering, should now receive less water, and be gradually brought to a resting state, previously to their throwing up their flower stems.

Achimenes picta.—Select healthy and vigorous young plants of this, and of *Gesnera zebrina*, and pot them; they will come in well for winter flowering.

Achimenes multiflora and *longiflora*.—When it has been possible to keep any of these dormant up to this time, if they are planted now they will flower during the autumn.

Gloxinias and *Gesneras*, in a growing state, require a good supply of water. Some prefer to dry off the former, when the blooming is past, and some prefer the contrary; very good plants have been grown on both plans. *Gesneras* are usually dried off; and the others, if not dried, need rest.

Cactuses.—As soon as ever the bloom is a little past let them be grown on freely in rich soil, in a hot moist atmosphere; when the growth is made, gradually harden them, so as to get to expose them for a time, in a hot, dry place, out of doors—the gravel-walk in front of a glass building is a good place—keep them through the winter in a cool, dry green-house, and bring them into the stove to flower, in succession, as wanted.

Gardenia—the Cape Jasmine—is a great favourite, from its delicious fragrance. Put in cuttings of both kinds, *G. radicans* and *florida*, in a dung bed, and grow the young plants there; indeed they grow better in such a situation than in any other.

Begonias.—The winter and early spring flowering kinds should be looked out and repotted, so as to have made good growth by the end of autumn. Some of these are very beautiful plants for winter flowering.

Palms.—Most of the plants will have made their growth; in that case, give them less water for a time, and also less moisture in the atmosphere, and then drop the heat a little by good ventilation. Those of the plants which are bearing fruit should have a liberal supply of clear manure water.

ORCHIDACEOUS HOUSE.

The same general features of management, as regards the atmospherical condition of this house, shading, watering, &c. as have been already explained at p. 254, must be continued—these conditions are, a high temperature, moist atmosphere, with little ventilation. In fact, there is little variation in these features of treatment throughout the six or eight genial months of the year, except that shading is not required but in bright sunshine. Generally speaking, the plants which manifest signs of growth should be repotted, or, at least, ex-

mined, and the material, whether soil or moss, about their roots, rearranged; and any of the plants which are growing away vigorously may get a little weak, clear, manure water occasionally—perhaps once in two or three days; if they are in pots, this can be given in the ordinary way; but in the case of those growing in baskets or on blocks, it can only be given them by means of the syringe. The blocks and baskets on and in which plants are growing, should, besides, be frequently damped by the syringe, using water of the temperature of the house.

Early-growing Plants will, in many cases, have completed their growth; in which case, they may with propriety be removed for a time, either to the cooler-house, or a pit where an average temperature of 60 degrees is kept up, without the aid of sun-heat. The object is, to submit the plants to an atmosphere less highly charged both with heat and humidity, and at the same time to afford them a greater supply of fresh air. Of course, they must be gradually submitted to the change, and must be taken back again to their former situation, when they show symptoms of flowering, or by the end of the summer.

Plants in flower, or at least, when they are ready to open their blossoms, should be removed to the cooler-house, where they open deeper coloured, and keep longer in flower. A warm green-house or conservatory is suitable for them when in this state.

Cattleyas.—This is a good time to pot some of the *Cattleyas*, which are about commencing to grow. Let it be done carefully, as described at p. 58.

Mr. Lyons says, and we quite agree with him, that “the general practice of eradicating weeds, is highly to be approved of, and among orchidaceous plants, when they smother or choke them, it becomes necessary,—therefore eradicate weeds. From these plants being grown principally in lumps of peat, in a short time the soil becomes covered with indigenous bog plants. These I would not call weeds, nor are they unsightly; on the contrary, I conceive them to be more pleasing to the eye, and to the general arrangement of the house, than a mass of shapeless lumps of brown peat and potsherds. I am fond of them, and rather cherish them to a certain extent. I sometimes thin, but never eradicate them; they are my hygrometers, and indicate when the plants require water by their leaves flagging; besides which, they retain a wholesome moisture under the roots of the plants.” We very much admire some of the smaller *Lycopodiums* planted about the pots and baskets; their peculiarly elegant form of growth renders them very appropriate for this purpose; there are several of them which are suitable, but

perhaps *L. denticulatum* is as good as any, and it is easily procured. The native *Hydrocotyle vulgaris*,—a plant with small round leaves,—looks very pretty in such situations.

FORCING-HOUSE FOR FLOWERS.

Cacti.—Such plants of *Epiphyllum* and *Cereus*, as were forced early, will by this time have nearly finished their growth. They should now be freely exposed to air and sun-heat, by placing them under a south wall, on gravel, or in any similar situation; if protected from heavy rains, they ripen their shoots more perfectly.

Pinks.—Attend to those bedded out, keeping them free from weeds, and the ground well stirred about them. In dry weather let them be regularly watered, using liquid manure, not too strong, once in a week or ten days.

Heliotropes.—Plants of this, and others of similar habits, should be regularly shifted as they advance, until they are in pots of the required sizes. The shifts should be small, in order to render the roots a matted ball, and check too rapid a growth, so that their supply of food, when forced, may depend more on judicious watering than on the quantity of soil in the pots. The plants should also be regularly stopped, so as to get them as bushy and of as good a form as possible. Every flower should also be picked off as soon as it appears, in order that the plants may not be weakened by its expansion.

Bulbous roots of all descriptions, in pots, should be kept clear of weeds; and should, also, be gradually ripened off as the leaves decay, and be protected from heavy rains, or they are very liable to commence their growth prematurely.

Pelargoniums.—Continue to shift, as the plants of the different forcings arrive at a proper state, and carefully attend to the watering and stopping the shoots of those already done. Cuttings should also be put in, if an increase of stock is required, or to replace such as are becoming unsightly, or old. If any cuttings, previously put in, are sufficiently rooted, pot them off in light rich soil, and keep them in a close pit until well started.

Chinese Roses, recently potted, should be stopped in, to make them bushy, and should not be allowed to bloom until required for forcing. Continue to propagate any desirable kinds, either by cuttings or layers, they will make serviceable plants by the spring.

After Treatment.—Continue the greatest attention to all plants in pots, with regard to weeding, watering, and other routine operations. Some of the plants which were first forced will soon exhibit signs of having completed their growth. Where this is the case,

begin to gradually reduce their supply of water, until they appear quite at rest; and then they should be kept in such state, if possible, until wanted in the forcing-house.

PITS AND FRAMES.

During the summer, the pits and frames serve as nurseries for young plants, hospitals for sickly ones, and very appropriate places for growing, to the greatest degree of perfection, the whole race of green-house plants.

Forcing Plants.—The different green-house plants intended for winter flowering, such as *Calceolarias*, *Pelargoniums*, *Salvias*, *Heliotropes*, &c. should be grown in these places, into good bushy plants, and all the flowers removed up to a late period in the autumn; the plants will then be in a state to be soon brought into bloom when required, by the application of a very slight increase of heat.

Tender Annuals will be, for the most part, removed to the green-house; but where any of the smaller kinds, or late plants, are still in the pits, they must be watered occasionally with dilute liquid manure, and kept growing on, as before recommended.

Green-house Plants, removed here for the summer, should get plenty of air. The ventilators in the wall beneath the plants should be kept constantly open; and the sashes, either removed during dull mild weather, and at night, when fine; or, if the weather is rough and unpropitious, they must be tilted up either at back, or on one side, as may be most convenient; if tilted sideways, it should be on the side opposite the wind. In all mild weather, they are benefited by full exposure. During the day, in hot sunny weather, the lights must be put on, and tilted up, and a garden-mat thrown over to keep the fierce sun-rays from the plants; for the intense brightness and heat often experienced in the summer is injurious to the plants, especially if they are just producing tender shoots. Nothing is more essential, during summer, than regular and thorough waterings, so that the plants do not suffer from want; for even if the earth gets dry without producing any immediate and apparent injury, it often lays the foundation of some. When newly potted, the plants require less water, until the roots again become active, and numerous in proportion to the size of the pots, than when the pots are very full of roots.

Stocks.—Sow some ten-weeks Stocks, to flower in February, next year. The plants should be exposed as much as possible up to November, when they may be taken to the green-house.

WINDOW GARDENING.

The *Permanent Plants*—by this expression we mean, such plants as *Pelargoniums*,

Fuchsias, &c., as distinguished from annuals, which do not last long—will be growing and flowering to perfection; and if they were potted at once into their full-sized pots, as recommended some time since, there will be little to do for them, but to keep them well supplied with water, which is very essential. As soon as the pots begin to get full of roots, give the plants at every alternate watering* some diluted clear manure water. Do not use saucers for the pots; it is better to let the superfluous water drain away. When any of the annual plants get past their prime, remove them (for they soon get shabby) and bring others into their places. Let the creepers be well supplied with water—manure water occasionally, as above,—and keep the shoots tied to whatever support is adopted; but not too regularly to make them look formal and stiff. Much of the beauty and effect of climbing plants are dependent on this air of graceful negligence, in the distribution of their branches. Ferns must be placed on the shady side of the house, and must be kept cool.

THE ROSE GARDEN.

The budding, which may go on two or three months in some seasons, may be continued till you have done all: the operation of budding on China and some other smooth-wooded stocks, either in pots or out of doors, may be done several months in the open air, and pretty nearly all the year in houses. Most of the tender kinds are of this sort, and are, when new or rare, propagated at any period; but as all the smaller kinds strike freely from cuttings, they are not worth the trouble of budding when they become moderately plentiful. Cuttings may be put in at any time of the year, and almost every month may be struck, potted off, or shifted, according to what they may in their different stages require. Of the budding operation we have already given an account; and so long as the stocks keep in order, so long may all sorts be propagated. Seedlings may be planted out, if they are large enough, from the seed-pans; and those already in beds must be kept clear from weeds, and be liberally watered, if the weather be dry. There must be still a vigilant look-out for the stock shoots and suckers, for at this period of the season it is incredible the rapid growth they will make at the expense of the head of the Rose. Roses on their own bottoms are likely to throw up suckers; these should be removed with a bit of the root, and be planted out in some bed or border, for they will make good plants; but if the bloom is over, and you care not for the main plant, the suckers may be left on till the

autumn, and be removed when the wood is ripe, as they will be less checked by the removal. They should then be pruned down to four or six eyes, and in the spring they can be cut down to two. It is not safe to cut too close in autumn pruning, because the winter frosts and changes frequently cause the stems to die down an eye or two, and this would be fatal, if they were pruned in the autumn, as close as they ought to be left. All Noisette and constantly-growing Roses require occasional pruning during their growth; the branches which have flowered should be cut back, and unless seed is wanted, all decayed blooms should be cut off. The rule for cutting back, is to prune down to a strong shoot, or a prominent bud, for the new growth keeps producing flowers in all the smooth-wooded and China kinds; the perpetuals should be cut back to a bud, when the flower of any branch is done with.

FLOWER GARDEN.

Anemones.—Take up the roots of any choice varieties that remain in the ground, as soon as the leaves have died away, and dry them carefully in the shade, previously to storing them away.

American shrubs.—Where it is desirable to propagate any of these plants, it may now be done by layers, or by cuttings. Remove the seed-pods as soon as they begin to form themselves; or, what is better, remove the flower-stems as soon as the flowers have faded.

Annuals sown in the open ground, or in beds, may be transplanted, as required, for filling up the borders. Remove them with good lumps of earth about their roots, and do it either in the evening or in dull or showery weather; slightly shade them for a day or two, if they require it, and give them good waterings. When annuals are to be left to flower where sown, let them be well thinned out while small, or they will crowd and spoil each other: a few may be sown to flower late.

Arboretums.—This is a good time of the year to see that all the names attached to the trees and shrubs about the lawns and shrubberies—which excite much more interest when named than otherwise—are correct; and, where they are not so, the corrections should be made.

Auriculas.—Renew the surface of the soil, and remove the dead leaves; be very careful in watering, that the roots get a due supply: the leaves will sometimes throw off all the water that might be supposed to reach the plant.

Biennials may be transplanted, as directed for perennials, if enough advanced.

Box-edgings, that were not clipped in the spring, may be done now. Do not let them get too large. They may be planted at any

* Or, do not let water stand in them.

time of the year, as has been often proved ; and perhaps summer is even the best time for doing this, if they are watered pretty freely.

Bulbs of spring-flowering plants, where they are ripened, and are not yet taken up, should be attended to without delay. Dry the roots carefully, and lay them by in a cool dry place till planting time.

Carnations.—As these will be approaching a blooming state, the buds must be thinned, if fine blooms are desired ; two or three are sufficient on a stem. If the weather is dry, they must be watered, and will be benefited by an occasional application, once in half a dozen times, of clear diluted manure water. When the buds are nearly ready to burst, the apex of the calyx should be evenly opened at the five points at which it divides, and just below this, it should be tied round, to prevent any of the divisions from splitting too far down ; a narrow strip of green silk, rendered adhesive by a coating of isinglass, is a very neat way of doing this, though a piece of common bass matting will do. The silk is easily removed, when necessary, by damping it. As the outer or guard petals open, they should be supported by a card, which is fixed beneath the flower by making two cuts, of half an inch long, at right angles, and pushing the points thus formed all one way ; they form a support to keep the card in its place.

Crocuses and *Snowdrops* are better left in the ground than taken up : if they are lifted and replanted once in three or four years it will be sufficient ; they flower better, and make more show, when the patches get a little thickened.

Dahlias.—Be careful to have these properly and securely tied in as they advance in growth. Excessive pruning, as sometimes practised, is injurious ; but to obtain fine blooms, the buds may be thinned. They require plenty of water. Watch carefully for and destroy earwigs.

Flower-beds and borders should be kept very neat ; all decaying plants, leaves, and flowers, should be removed every day, or at most every two or three days. Seed-pods should be removed in all cases, except where it is specially desired to preserve seeds of any choice flower. Frequently hoe up the borders, where not covered with plants, and let this be done deeply, three or four inches down ; and do not be too particular in raking off all the stones.

Half-hardy flowers of all kinds, not planted out during last month, may be put out now, and should be employed to fill up vacancies as the early sown annuals go off. Most of these are the better for being stopped back frequently, when first put out ; for, though it keeps them back from flowering, yet they grow

much more compactly, and eventually produce a better display of flowers.

Herbaceous plants of any choice or rare kinds may be propagated by cuttings or division, as may be most convenient.

Lawns must be duly mown, rolled, or swept, or that greatest of all charms in an English pleasure ground, a velvet-like surface, will not be realized.

Mule Pinks are exceedingly desirable flowers ; they should be propagated either by cuttings or by layers : young plants are much the best, if they are strong and healthy.

Pansies.—Continue to propagate these plants for blooming in spring ; those that have been blooming hard should be cut pretty closely in the bed, watered, and a slight dressing of leaf mould laid about the plant. Rooted cuttings should be planted out, to form fresh beds.

Perennials.—The early sown ones may be transplanted in borders of poor soil, to induce vigour of constitution, and an early flowering habit.

Picotees require the same treatment as *Carnations*.—Take an early opportunity of increasing the stock of these plants by the process of layering, which is a more certain mode than piping.

Pinks.—Early in the month take off the pipings for striking, and plant them under hand glasses ; the practice of cutting off the points of the leaves is not a good one. If seed is wanted, remove the decaying petals of the flower.

Polyanthuses.—In the early part of the month these may be parted, and planted out in a cool situation, partially shaded : a north border suits them better than any other place.

Primroses, double.—These may be parted, and planted out for increase. The double crimson and double white are very beautiful kinds, but much less frequently seen than they ought to be. They prefer a cool and somewhat shady situation, and grow in light loam, mixed with very old decayed dung and leaf mould.

Ranunculuses.—The late ones should be taken up, as soon as the foliage has died down, and dried carefully, previously to being stored away. They must be looked after very closely, or many roots will be left in the ground.

Rockets.—The double varieties of these are very desirable plants, and should now be propagated by dividing the plants, and planting the divisions in a shady situation.

Roses may be budded any time this month, when the stocks are in a fit state for the operation ; that is, when the bark rises freely. Cuttings of the China Roses may be put in.

Rhododendrons.—If there are any seed-

Pods forming on these shrubs, remove them at once, in order to throw strength into the young branches, and cause them to set their flower-buds more freely.

Seeds.—Preserve the seeds of any annual plants that may be particularly fine; but the plants get too unsightly for a flower-garden when left for seed, and consequently this should not be attempted in a general way.

Seedling bulbs, when their leaves have died away, should be set away in a dry place, in the pans or boxes they have been growing in, until the growing season again arrives.

Shrubs.—When any of the shrubs are making strong vigorous shoots, they should be cut back, to cause them to branch.

Staking must be attended to with all plants that have long stems, and are not stiff enough to maintain an erect position; but it must be done with taste. Use as few stakes as possible, tie loosely, and do not use clumsy materials for the operation.

Stocks.—In saving seeds of these, confine yourself to two or three perfectly formed pods from the main central spike of flowers produced by the plant, as a means of providing a batch of double ones.

Sweet Williams.—Where any of the double, or any very choice varieties, are possessed, they should be propagated by taking the offshoots, and striking them as cuttings: they are not always to be depended on from seeds.

Tulips.—These will, or should be, all taken up, and either dried or drying ready for storing away. Let them be dried carefully in the shade, and store them carefully in a cool dry place.

Wall-flowers.—Continue to propagate the double varieties by cuttings under hand-glasses: the plants raised now will provide a succession for next year's blooming; too many of these can scarcely be grown. There are some German Wall-flowers to be bought in the seed-shops, which in some soils come very fine, both double and single. Procure and sow seeds now for next year.

Winter Aconites should be planted some time during the present month.

KITCHEN GARDEN.

If the deep and regular hoeing, combined with the trenching and pulverizing of the soil, has been attended to, the reward will be the pleasure of looking upon a *clean* garden, and probably *healthy* crops. Continue still to be on the alert, and plant, hoe, and water, with energy; remove all decayed leaves, &c. from the crops which are being cut, to where they will be immediately dug in.

Angelica is sometimes earthed up as celery, and should be done in dry weather. When cut,

remove the earth quite away from the crown of the plant, which will prevent the tendency it has to rot.

Artichokes (*Cynara Scolymus*).—When the heads are cut off, break the stalks close to the ground; for, although lateral shoots may produce heads, they are always small, and when the stalk is allowed to remain it weakens the whole plant.

Asparagus.—See that it be watered, as before recommended, if not already done; renewed waterings can still be given.

Beans.—A planting of the early Mazagan may yet be made upon a south border or on some early spot; if the weather is very dry steep the seeds, or water the drills, before planting.

Brocoli.—Full plantings may yet be made in the beginning of the month; and towards the close a small sowing may be made, which will be useful for early planting next season.

Brussels Sprouts.—A full crop may be planted, choosing showery weather for the operation; but if drought should be of long continuance, still plant out, taking care to water the plants both before and after planting.

Carrots.—As many prefer them in a young state, this month is suitable for another sowing: attend to keeping the main crops clean.

Cabbages.—Have the ground prepared and sow for spring use about the end of the month: plant out full crops for using in autumn and winter.

Cauliflowers.—Make a large planting of those sown in May, which if pricked out will be all the better: give them a rich and warm place, and plant out, about twenty inches square; if the weather is dry attend to watering, especially immediately after planting, which tends to settle the earth in a natural form about the roots.

Celery.—Continue to plant out succession crops; the early plantings should be well hoed; remove all the suckers which appear about the plants, previous to earthing up, always choosing a dry day for the latter operation; earth slightly at first and carefully, so as to prevent any of the soil falling into the hearts; draw the earth to each individual plant with the hand; subsequently support the leaves by means of bass matting or string passed round each plant, after which the earth can with safety be applied; when done the string should be taken off. In earthing up in broad trenches, two boards about eight inches deep and of the breadth of the trench are used; these being placed between two rows and the earth filled in between them, there is less danger of its getting into the hearts of the plants, and the work is expedited; it is very advisable to have two persons at the operation, one for each side of the ridge.

Endive.—Put in a main sowing now: make a planting of that which was sown in June, and repeat the watering until it takes with the ground.

Garlic.—Treat as Shallots and store away in boxes, or lay the roots upon a dry floor when sufficiently dried.

Greens.—Make plantings of these after potatoes, if not done.

Herbs.—Gather or cut these as recommended at p. 260; and plaut out all sorts that may have been propagated this season.

Kidney Beans.—Make another planting of the dwarf and earliest sorts upon a warm border, and where it may be convenient to protect them a little in autumn.

Leeks.—Plant without delay if there are not a sufficient number already in.

Lettuce.—Sow for succession and plant out on the top of Celery ridges, or on any spare piece of ground; and prepare for sowing for winter use.

Mushrooms.—Collect horse droppings for fresh beds; when making up the beds, it is well to put in a layer or two of loam, which counteracts the tendency to over-heat; keep the atmosphere of the house close and cool; heat about 60 degrees.

Onions.—Choose the earliest fine day to get up the principal crops, which must be ready. Prepare for the winter sowing; they will do well on Strawberry ground, or on any rich, deep, and fresh soil. Sow thick; the plants will be found useful to draw from, both for salad and kitchen use.

Parsley.—This is a good time to make another sowing, and it is not so apt to run to seed as when sown earlier.

Peas.—Put in the last sowing at the end of the month, choosing the early sort, and sow upon the earliest spot of ground at command; if the ground is dry the seed may be steeped or the drills may be well watered previous to sowing; attend to staking and topping the advanced crops.

Potatoes.—Where young potatoes are prized make another planting: those to be kept for seed may be laid in the sun for a few days.

Radishes.—Sow for a supply in September and October, in the beginning and end of the month.

Salads.—All small sorts, such as Mustard, Cress, Rape, &c., should be sown at least twice this month: choose a shady situation, in which it will keep longer fit for use.

Shallots.—If ripe the leaves will have begun to fade, when they should be taken up and spread out or hung in a dry place.

Spinach.—Get in a sowing for winter use, and prepare for another to succeed it.

Tomatoes.—Keep these close to the wall, and remove all laterals as they appear; do

not seek to have a great deal of fruit upon each plant, unless they are very early.

Turnips.—This is a most favourable time for sowing for winter use, therefore make now a principal sowing on well prepared ground. Attend to hoeing and thinning out the previously sown crops.

Vegetable Marrow.—Thin out the shoots and peg them down; where fruit are wanted of large size, they may be assisted by placing a slate below them and divesting the vine of all except one or two.

CUCUMBER AND MELON FRAMES.

Cucumbers.—The bearing plants in the frames should be watered sometimes with clear manure water, a good deal diluted, in order to keep them in vigour. Continue the stopping and regulation of the shoots, as already directed; and do not let them bear too many fruit at once. The ridge Cucumbers will require attention in the regulation and management of their branches.

Melons.—Cover the surface of the beds of late plants with slates or tiles; this keeps the fruit from the soil, and also assists the growth of the plants by means of the extra heat produced by the reflection of the sun's rays. The most critical time with Melons, is about the period of setting their fruit; at this time they are very impatient of water, especially if applied at random over the plant, or given to them without being warmed to the heat of the bed. When the fruit is nearly ripe withhold water, and give it as much light as possible. Where the fruit of the early crops is cut, prune back the vine, stir up the soil, give a good watering, add a slight lining to get up a little heat, and keep the frame close and moist, and they will often produce a tolerable late crop.

FRUIT GARDEN.

When the trees have very heavy crops, mulching and watering will assist to bring them to perfection. Make it a rule to have all the departments where the fruit is about to ripen, perfectly clean; and protect it from birds, &c.

Apples.—The directions given at p. 261, may still be followed with advantage.

Apricots.—Again look over the trees, and as the fruit will now be stoned make a final thinning; this done in time will prevent many from falling off: use a sharp pointed knife for the operation, and attend to the observations at p. 261.

Budding.—This is the proper season for this important operation. (See p. 261.) Remove the bandages from the spring grafts, and see that they are properly secured against winds and accidents.

Cherries.—Remove the nets from those trees from which the fruit is gathered, and give the trees a good syringing in the morning. Protect Morellas from the birds, after having laid in a succession of young wood, as with Peaches.

Currants.—Net these over as they ripen, and cover those close up with nets which are wanted to be kept.

Figs.—Lay in the shoots close to the wall, and give all the light and sun possible : attend to directions at p. 261, for shortening the shoots, &c.

Gooseberries.—Both fruit and bushes may be still assisted by judiciously shortening the side shoots : protect the best sorts with nets, and some of the Warrington and other good keeping sorts should be covered most carefully with mats or nets, for prolonging the season.

Peaches.—The finer sorts may now be increased by budding : for routine management see p. 262.

Plums.—Lay in a succession of young wood in the old trees, as the fruit from young wood is better than that from the old spurs.

Pears.—Remove the breast wood and take off all the bad shaped fruit.

Strawberries.—See that those rooting in pots (for forcing) do not want for water ; depend chiefly on Keen's seedling. Make nursery beds for new plantations ; the sooner this is done the better ; protect with netting those which are ripening, and attend to gathering those intended for preserving, in dry weather.

Vines.—Stop the main shoots and keep them thin, and closely nailed in ; remove all laterals, thus concentrating the strength of the plant in the wood, for next season, and in the fruit of the present.

ON ACCLIMATIZING PLANTS AT BIEL, IN EAST LOTHIAN.

We are so convinced that plants cannot be acclimatized, that we never read about it without thinking of the hopeless task of washing the blackamoor white. The climate, soil, and circumstances, may be altered to suit the tree, but not the tree to suit the climate ; and so it will appear to any one who reads even the best papers on the subject. The following, for instance, is from a high authority, Mr. Street, who was gardener to the Honourable Mrs. Hamilton Nesbitt. He says, from his own experience, (writing in 1826) :—

"I find that poor, dry, and shallow earths and declivities are particularly well adapted to preserve many plants through the winter season. The quicker the superabundant fluid passes away from their roots, the better. When excess of rain or moisture and severe frost happen, nearly together, plants generally

suffer much more than by dry frost. If the situation of the plants be dry, frost does not hurt them so soon as if it be wet. Many kinds of plants certainly can endure a more congenial climate or situation than their native place of growth. I also find that plants obtained from cuttings are hardier than seedlings ; the roots of the former seem to possess more ability to resist severe weather, I therefore plant out cuttings, if they are well rooted, in preference to seedlings. Several kinds of plants endure our winters much better while they are small, than when they become large. By keeping some plants short of food, it helps to preserve them in the open air. My past experience has convinced me how little moisture many plants require. Many kinds of smaller plants, if they are sunk in their pots in the open border, with the hole at the bottom of the pot left open, will endure the winter, which they would not if turned out of pots. I have sunk in the open borders, in their pots, *Ononis natrix*, *Hypericum balearicum*, *Teucrium fruticosum*, *Convolvulus Cneorum*, and *Mesembryanthemum uncinatum* ; and by this method, and by laying a little sand, or sandy gravel, over the surface round their stems, these plants survived the sharp winter frost without any other protection, and continued in good health.

"Under-draining is another advantageous practice. Some small drains, which convey the water from the water-pipes attached to the roof of the house at this place, cross a border about eight or ten inches under the surface. Over these drains, and by their sides, I planted out with success several reputed green-house species at several periods. In 1816 I planted *Lycium afrum*, native of the Cape of Good Hope, over a drain under a south wall, which is six feet high, and trellised ; the plant is covered in winter two mats thick ; it thrives remarkably, being nine feet high ; and it flowers freely, in some years producing seeds. Over this same drain I planted *Lavatera triloba*, a native of Spain ; it endured the three last winters well, flowered freely, and produced much ripe seed ; this species has endured the winter for the same period in several other places ; last year I collected more than sixteen ounces of its seed. In the same place, several years ago, I planted *Camphorosma monspeliaca* in its pot ; it thrives well, and flowers freely without protection. *Lychnis coronata*, a Chinese plant, was planted out four years ago, it thrives remarkably well, and flowers freely ; I have seen four fine large flowers expanded on it at the same time. *Gnaphalium Stæchas*, of the south of Europe, was also planted out some years past in its pot ; it thrives well, and flowers most abundantly ; it ripens seeds, and endures great drought.

"Several small species of plants may be preserved in the open border by placing an empty flower-pot over them during winter. In this way *Stachys coccinea*, a native of Chile, has been preserved here in very severe winters; it grows well, and ripens seed. I last year planted out *Teucrium Marum*, which is indigenous in Spain, in the open border in its pot, in a place with a dry bottom, and full exposure, some sandy gravel being put over the surface; it endured the winter without any other protection, and thrives well. *Calla æthiopica*, in the open border, produces much ripe seed here; I have two ounces so ripened. Some years ago I sowed the seed of this plant at the end of March, in open ground, in vegetable mould on a clay bottom, placing a portion of an old broken frame over it; it was kept duly moist; in about five or six weeks fifteen plants appeared; they continued to grow all the summer; at the end of the autumn I took them up, potted them, three plants in a pot, and protected them in winter. Afterwards I turned one of the seedling plants into the open ground under a high wall with a west aspect, where the sun cannot shine on it till past twelve o'clock; here it has endured the last three winters with only some decayed tanner's bark put over its roots on the approach of severe weather.

"*Hypericum ægyptiacum* I put out in the open border in its pot several years ago; it still endures the winters, and flowers a long time. I have also discovered that *Commelyna tuberosa*, from Mexico, a reputed stove plant, is hardy, a plant having stood the two last winters in the open border; last summer it flowered and ripened seeds, some of which fell on the border, and produced seedling plants about the end of May. I covered the old plant with some sand only; it endured last winter, and is now very strong.

"*Mimulus glutinosus*, a Peruvian plant, I put out in its pot under a south wall in a poor dry place, and laid some sandy gravel on the surface round it; it endured the last four winters well without covering; it flowers freely in June, and continues several weeks; it ripens seed, of which I have above an ounce. The plant is now six feet high; seedling plants of it flower when two years old.

"*Marrubium pseudo-Dictamnus*, a native of Crete, I put out under a low south wall in its pot, in poor dry earth; it endures the winters and flowers freely. *Disandra prostrata*, which comes from Madeira, I planted out in the open border, at some distance from a wall with an east aspect, close to the root of a small *Laburnum*, on which is grafted *Cytisus elongatus*; it is so sheltered and shaded by the plant over it, and the wall, that it only gets the morning sun in a chequered way. On the approach of

winter, I put some rather sandy earth about it, and then laid over it some small ornamental stones, shells, &c. with the round side uppermost. By this management it has endured the winters, and flowered in the summer. I put a single *Oleander* in the open air, in its pot, under a south wall; it endured the winter with no other protection; four flowers opened on it at the same time, in the end of June. *Pittosporum Tobira*, from China, has lived several winters in an open border at about eight or nine feet distance from a high wall with a west aspect, where the sun does not shine on it till after 10 o'clock in the morning. It first opens its flowers in May, and these continue several weeks.

"I planted out several plants of Broad-leaved *Myrtle* under a south wall, which is trellised, and six feet high; at the north side, or back, is a terrace, so that the wall is filled up behind with earth to its top, or nearly so. This wall is thirty-six feet long; it is wholly covered with *Myrtles*, and the before-mentioned *Lycium afrum*. The earth in which they all grow so well, is fine sandy loam, only ten or twelve inches in depth, on a clay bottom. At the approach of hard weather, I cover their roots with moss, and the whole wall of plants two good mats thick, which protection is quite sufficient for them through the most severe winter.

"Several kinds of plants which will not stand our winters abroad, and which readily strike root from the cuttings, may be put in a pot, eight or ten together, and protected in winter. In the following spring they may be separated and planted out in the borders to flower; they are thus more likely to produce seeds than if kept in pots in the common way.

"Of *Canna indica* I have put out several plants annually, during a period of eight or nine years past, in the open borders in rich earth; they grow, blossom, and ripen seeds, growing near five feet high. Some years this plant sows itself. I have collected two ounces of seed which ripened in the open borders in one season. The seed I sow every year in the open ground, in coarse vegetable mould, on a clay bottom on a cold exposed situation, in the following manner. About the middle of the month of May, I dig the earth, and make a drill, as for Peas, about two inches deep; I then put in the seeds, lay on the earth and press it, so as to leave the drill rather concave, or hollow, to enable it to retain moisture; no covering is requisite, but water is given in dry weather. The plants appear in five or six weeks, even when the seeds are some years old; I let them remain until November, when they are become strong, and then take up the plants, with balls of earth, and put three or four in rather a small pot, and keep them in a

glass-house, giving them larger pots as they grow bigger. These plants begin flowering at one year old, and may be put out in the open border in the end of May, or in June, if the weather is then fair.

"*Jasminum revolutum*, a native of China, has endured the winters in the open air, under a wall, and begins to flower freely the end of May, or early in June, but has not produced seeds yet. *Teucrium flavum*, from the south of Europe, I put out under a low south wall, in the spring of 1816; it endures the severest winters in poor dry earth, and continues a fine, large, bushy plant. It produces ripe seed, which I sow in a pot in spring; the plants soon appear, they begin to flower at two years old. *Coronilla valentina*, a Spanish plant, several years ago, was planted in the open air, under a south wall, remaining in its pot. It endures the winter and flowers freely, dispersing its pleasing fragrance to some distance. I reckon it a good method to revive plants by seed at times, for the flowers so obtained are more perfect in colour and shape. *Coronilla glauca*, a native of the south of France, has endured several winters in poor dry places under a wall, and flowers well, exhaling an agreeable perfume, and producing ripe seed in abundance in July.

"*Senecio lanceus*, a native of the Cape of Good Hope, I put out under a south wall, in poor dry soil, in the spring of 1816. The same plant has endured every winter with no other protection; its root is grown very strong; it is, however, killed down to the ground in winter; in spring, it shoots up to full five feet high, flowers and bears seeds in plenty, sows itself all about the dry, gravelly, sandy places, and produces slight varieties; several plants of it which stood last winter in the open borders, are now flowering. *Medicago arborea*, a native of Italy, I put out in the spring of 1816, in poor dry earth, under a south wall; it stands the severest winters with no other protection, and flowers abundantly during most part of the year, producing seed, of which I have about one pound; it sows itself here under a south wall; the plants become seven or eight feet high."

Of course, any one may observe from all this, that the plant requires its warm situation and protection, and has both. There is nothing to show that plants are altered, but that the place and circumstances attending the culture are made to conform to its nature. And here is the grand mistake which is made by every writer that we have noticed; we care not what the means are that are used, it is not the plant reconciled to the place, but the place reconciled to the plant. We know there are many ways of altering the temperature of a situation; and in all the directions we ever saw for

acclimatizing (as it is called) a plant, we have observed the means recommended merely tend to raise the temperature of the locality, not to harden the plant.

LINDLEY'S VEGETABLE KINGDOM.*

It is seldom we have an opportunity of noticing a real book of gardening. There has been nothing like one since Loudon's *Encyclopædia*. Periodicals and treatises, tracts, pamphlets, and hand-books, have abounded: Johnson on this, Hoare on that, Glenny on the other, and other people, who never try to reach beyond a paper in a magazine, or a little *tome* that we can put in our pockets, have favoured us, from time to time, with useful and popular small works; but we have had nothing like a book for the library, of a distinct and standard character, for a long time; and we rejoice in the appearance of a goodly volume, highly embellished with first-rate wood engravings, and prints from the glyphographic process, illustrating the numerous families which make up "the vegetable kingdom." This work professes to give us the structure, classification, and uses of plants, illustrated upon the natural system,—a system which Professor Lindley was the fittest of all men to explain and demonstrate, because he had already condemned that of Linnaeus as a "once popular but superficial and useless system,"—and therefore was, as it were, bound to supply us with the best exposition and application of that which was intended to supersede it. By way of fairly starting, we will place before our readers the author's own words, in portions, selected from his preface and introduction, and then examine how far the intentions of the writer have been carried out; we merely observe *en passant*, that there are those who will not approve of the abrupt condemnation of the Linnæan system, which has been defended up to a very recent date, by no less a botanist than the editor of the *Hortus Cantabrigiensis*, in the preface to the last edition of that work. Our notions are, that most of the objections to the natural system applied to the carelessness with which different subjects were classed together, rather than to the use of a natural system. Indeed, the author of the *Vegetable Kingdom* admits the want of information on the subject. He says, "In our own language there was nothing whatever; and the natural system of arranging plants, although occasionally mentioned as a something extremely interesting, was currently regarded as the fond

* The Vegetable Kingdom; or, the Structure, Classification and Uses of Plants, illustrated upon the Natural System. By John Lindley, Ph. D., F.R.S., L.S., &c. With upwards of Five Hundred Illustrations. London; Bradbury and Evans.

speculation of a few men, with more enthusiasm than sound judgment: and this too was the opinion expressed by persons who stood at the head of English botany, in the estimation of many British Naturalists." Speaking of what he felt personally, he says, "The author had himself severely experienced the want of some guide to this branch of natural history, and he felt anxious to relieve others from the inconvenience which he had encountered." Nor was his complaint confined to the deficiency of works in the English language only; for he says, "At that time too, there was nothing of foreign origin which could be advantageously consulted; for Bartling's *Ordines* had not reached England; Perleb's *Lehrbuch* was unknown, and both it and Agardh's *Classes* were of too slight a texture to be generally useful to any except botanists themselves." It does not appear to us that a natural system would be objectionable; but the early blunders committed by placing plants in the wrong groups, and the seeming incongruity of the members of different (so called) families, besides the doing and undoing among the early friends of the system, created objections among the learned, to say nothing of the unlearned students of botany, who saw in the then unexplained arrangement, plants of opposite natures placed in the same orders, some of which comprised subjects apparently not at all allied,—the only seeming affinity being some trifling subordinate feature. The reconciling of these differences, or the reconstruction of the families, was properly the work of an advocate of the system; and while we object to the kicking down of the ladder by means of which botany attained a considerable elevation, we do not deny that a well arranged natural system, founded on unerring principles, will be far more comprehensive. Many popular writers opposed the natural system of Jussieu upon very superficial grounds; but it was the vagueness of all that could be read about it, and of a good deal that was taught of it, that raised up so many enemies; nor were the arguments adduced in its support at all calculated to create respect for it as a sound available system, but there is little question that Linnæus and Jussieu were at one time party badges, and neither of the systems were pursued with half the ardour they deserved to be. The natural system of Jussieu was denounced by Rennie as an "unnatural system," and its faults were pounced upon, as if they were necessarily a part of the system itself, instead of a misapplication of its principles. The plain matter of fact is, that Linnæus settled the several claims of all his families by the organs of generation. Jussieu decided by examining all the points in their structure; the former could not furnish fami-

lies nor distinctions sufficient for the proper placing of all the novelties, and the latter could make room for as many families as there were plants; but let Dr. Lindley dispose of the thing his own way:—

"The great obstacle to the adoption of the Natural System of Botany in this country was the supposed difficulty of mastering its details; but of that difficulty it may be observed, in the first place, that it is only such as it is always necessary to encounter in all branches of human knowledge; and secondly, that it has been much exaggerated by persons who have written upon the subject without understanding it.

"It has been pretended that the characters of the Natural classes of plants are not to be ascertained without much laborious research; and that not a step can be taken until this preliminary difficulty is overcome. But it is hardly necessary to say, that in natural history many facts which have been originally discovered by minute and laborious research, are subsequently ascertained to be connected with other facts of a more obvious nature; and of this Botany offers perhaps the most striking proof that can be adduced. One of the first questions to be determined by a student of Botany, who wishes to inform himself of the name, affinities, and uses of a plant, seems to be, whether it contains spiral vessels or not, because some of the great divisions of the vegetable kingdom are characterised by the presence or absence of those minute organs. It is true that careful observation, and multiplied microscopical analyses, have taught Botanists that certain plants have spiral vessels, and others have none; but it is not true, that in practice so minute and difficult an inquiry needs to be instituted, because it has also been ascertained that plants which bear flowers have spiral vessels, and that such as have no flowers are usually destitute of spiral vessels, properly so called; so that the inquiry of the student, instead of being directed in the first instance to an obscure but highly curious microscopical fact, is at once arrested by the two most obvious peculiarities of the vegetable kingdom.

"Then, again, among flowering plants two great divisions have been formed, the names of which, Monocotyledons and Dicotyledons, are derived from the former having usually but one lobe to the seed, and the latter two,—a structure much more difficult to ascertain than the presence or absence of spiral vessels. But no Botanist would proceed to dissect the seeds of a plant for the purpose of determining to which of those divisions it belongs, except in some very special case. He knows from experience that the minute organization of the seed corresponds with a peculiar structure of

the stem, leaves, and flowers, the most highly developed, and most easily examined parts of vegetation; a Botanist, therefore, prefers to examine the stem, the flower, or the leaf of a plant, in order to determine whether it is a Monocotyledon or a Dicotyledon, and rarely finds it necessary to anatomize the seed.

"The presence or absence of albumen, the structure of the embryo, the position of the seeds or ovules, the nature of the fruit, the modifications of the flower, are not to be brought forward as other difficult points peculiar to the study of the Natural System, because, whatever system is followed, the student must make himself acquainted with such facts, for the purpose of determining genera. The common Toad-flax cannot be discovered by its characters in any book of Botany, without the greater part of this kind of inquiry being gone through.

"In the determination of genera, however, facility is entirely on the side of the Natural System. Jussieu has well remarked, 'that whatever trouble is experienced in remembering, or applying the characters of Natural Orders, is more than compensated for by the facility of determining genera, the characters of which are simple in proportion as those of Orders are complicated. The reverse takes place in arbitrary arrangements, where the distinctions of classes and sections are extremely simple and easy to remember, while those of genera are in proportion numerous and complicated.'

"But really all considerations of difficulty ought to be put aside, when it is remembered how much more satisfactory are the results to which we are brought by the study of Nature philosophically, than those which can possibly be derived from the most ingenious empirical mode of investigation."

These it seems were the motives for publishing the *Introduction to the Natural System of Botany* in 1830, which may be regarded as the first of this work, and the author avows that it was written in illustration of the popular system of De Candolle; "but," he says, "daily experience showed the *insufficiency of that system*, and the necessity of forming subdivisions of the primary groups of plants, higher than their so-called natural orders, became so apparent as to lead to serious attempts to carry out a plan of alliances, in imitation of a few continental writers." These attempts were embodied in a second edition of the work, under the title of *A Natural System of Botany*. A considerable portion of the preface in the present volume goes to the admission that the classification in the second work was not like that of the first, and the Professor takes credit for not persevering in error; but it must be remembered that it

was these errors alone that gave the opponents of the then called Natural System, the opportunity of criticizing, and even condemning it. If the arrangements so generally complained of have been changed, it is only fair to presume that those who condemned before will recognise that change; nobody complained of the Natural System *as it might be*, they only condemned it *as it was*. But it has been doomed to further changes. The volume before us is the third edition, and the title is more comprehensive. The arrangements are again changed; and in anticipation of the critical reader's conclusion, the author says, "he is not conscious of having ever pretended that it even approached permanency." Perhaps not, but authors are nevertheless supposed to mean what they write, and therefore one does not look for a pretence or a declaration to such effect. However, let the author speak for himself: he says,—

"In fact, there is no such thing as stability in these matters. Consistency is but another name for obstinacy. All things are undergoing incessant change. Every science is in a state of progression, and of all others the sciences of observation most so. Since 1836 the views of the Author have, of course, been altered in some respects, although they have experienced but little modification in others. This is inevitable in such a science as that of Systematic Botany, where the discovery of a few new facts or half a dozen fresh genera may instantly change the point of view from which a given object is observed. The Author cannot regard perseverance in error commendable, for the sake of what is idly called consistency; he would rather see false views corrected as the proof of their error arises. His object, and, he thinks he may say that of every one else who has turned his attention to this question of late, has not been to establish a system of his own, which shall be immutable, but to contribute to the extent of his ability toward that end. He indeed must be a very presumptuous person, having a microscopically small acquaintance with his subject, who should even dream of being able to accomplish such a purpose. All that we can do is to throw our pebbles upon the heap, which shall hereafter, when they have sufficiently accumulated, become the landmark of Systematical Botany."

It were to be wished that matters of difference could be discussed temperately, because it might be truly said then, that we should live and learn; but uncourteous condemnation frequently shuts the door against improvement, and embarrasses the man who lays a good foundation, and might, as in the case of Professor Lindley, alter and improve the superstructure. In this case the work is almost

a new creation, nothing but the foundation is old; it is in every possible way improved, and in almost all things changed. The object of the work, and some of the changes, are thus stated in the preface:—

“Its object is to give a concise view of the state of Systematical Botany at the present day, to show the relation or supposed relation of one group of plants to another, to explain their geographical distribution, and to point out the various uses to which the species are applied in different countries. The names of all known genera, with their synonyms, are given under each Natural Order, the numbers of the genera and species are in every case computed from what seems to be the best authority, and complete Indices of the multitudes of names embodied in the work are added, so as to enable a Botanist to know immediately, under what Natural Order a given genus is stationed, or what the uses are to which any species has been applied. Finally, the work is copiously illustrated by wood and glyphographic cuts, and for the convenience of students, an artificial analysis of the system is placed at the end: Some of these points demand a few words of comment.

“In offering to the public a view of the present state of Systematical Botany, the Author has pursued the plan developed in the succeeding pages, of first taking certain characters common to very extensive assemblages of plants, by means of which Classes have been constituted; and, secondly, of breaking up those Classes into minor groups called Alliances, whose common characters are also more extensive than those of Natural Orders, and under which the Natural Orders are themselves assembled. Very short characters have been proposed, under the name of Diagnoses, for both Alliances and Orders; these are intended to express the prevailing tendency observable in each group, but do not include casual exceptions, for which the reader is referred to the descriptions immediately following the Diagnosis. The Alliances are the most important feature in the arrangement; and it is to be hoped will be found much better limited than they formerly were. The serious fault committed in the Author's former work, of founding Alliances upon single Natural Orders, has been avoided in every case except that of Palms, which in reality seem to form an Alliance by themselves. The name Alliance has been preserved in preference to that of class, family circle, cohort, &c. because it is not susceptible of two interpretations, as is the case with all the others; it is employed as an English equivalent for the Latin term *nixus*, which some have imagined was a misprint for *nexus*, but which was used in the sense of Cicero, and intended to express

a tendency to assume some particular form of structure. If any one should inquire why no synonyms have been quoted to these Alliances, concerning which so many Botanists have lately occupied themselves, the Author's answer is, that they have hitherto been much too little agreed upon, except in a few very special cases, and that an examination of their history would involve an inquiry which must extend back to the *Anthemides* of Cæsalpinus, and which belongs to the History of Systematical Botany rather than to its actual condition. The whole practice, indeed, of quoting synonyms is carried by Botanists beyond useful limits. It is in many cases a matter of courtesy rather than of utility; and for this reason, as no one is bound to be courteous to himself, the Author has very generally refrained from making references to his own writings, except when some real necessity for doing so appeared to exist. He may also state in this place, that throughout the present work he has struck out many of the citations given in the last edition, conceiving it useless again to occupy space with the names of authorities which can be always found by those who are desirous to search for them.

“In pointing out the affinities of plants the opinions of the most judicious systematists have been consulted; among these the names of Arnott, Auguste de St. Hilaire, Bennett, Bentham, Ad. Brongniart, Brown, Cambes-sédes, Decaisne, the De Candolles, Endlicher, the Hookers, the Jussieus, Martius, Miers, and Richard, stand in the first rank. In addition to the short discussion upon this subject which always follows the paragraph descriptive of a Natural Order, there is appended to the list of genera a plan of indicating affinity now adopted for the first time. It consists of printing the name of the Order under discussion in capital letters; placing right and left of it in small Roman letters the names of those Orders which are supposed to be in nearest alliance to it; and above and below it in italic type the names of such as are only analogous, or at least have a more distant affinity.”

It is clear, therefore, that those who condemned the natural system for its incongruity were doing a real service, inasmuch as it called attention to the errors and deficiencies, and brought the advocates of the system to a consideration of making some progress to keep pace with the times. The Linnæan system has no disciples of sufficient perseverance to modify, to alter, improve, and illustrate it. It is the same humdrum thing now, as it was in Linnæus's time, while the Natural System has been steadily advancing, and when it shall once be brought to perfection, or even to a state bordering on it, will be intelligible to most people who take any delight in Botany. The true

end of writing is to be understood, and a system to be generally useful must be plain and intelligible to the mass, as well as to those who deeply study. The Linnæan system, up to a certain point, would be understood by most people, but even botanists themselves found great difficulty in referring many novelties to a distinct class and order. The Natural System will hardly be learned in a lifetime; but Mrs. Loudon's notions on this subject were excellent. It was that lady's plan of teaching to study one order only, and to continue studying that one in all its bearings, until we became master of it, and then proceed to another, so that indifferent persons, instead of being disheartened by the apparent quantity of study required to obtain even a superficial knowledge of all, might be delighted with their search after plants of the order they were studying, and become well acquainted with the subject they had in hand, so that in studying the natural orders, persons totally unacquainted with botany would be encouraged by this single-handed study to proceed. The worst thing a young student has to encounter is the jargon of botanical names, and Professor Lindley has really done good service by suggesting improvement in these matters. He says:—

"No one who has had experience in the progress of Botany, as a science, can doubt that it has been more impeded in this country by the repulsive appearance of the names which it employs, than by any other cause whatever; and that, in fact, this circumstance has proved an invincible obstacle to its becoming the serious occupation of those who are unacquainted with the learned languages, or who, being acquainted with them, are fastidious about euphony, and Greek or Latin purity. So strongly has the Author become impressed with the truth of this view, that on several occasions he has endeavoured to substitute English names for the Latin or Greek compounds by which the genera of plants are distinguished. Upon turning over the late volumes of the *Botanical Register* many such instances will be found, in imitation of the well-known and usual English words, Houndstongue, Loosestrife, Bugloss, Soapwort, Harbell, &c. He cannot, however, boast of any success in these feeble attempts at reforming a great evil; nor, perhaps, ought he to have expected it. If such English names are not universally adopted, it is to be suspected that the circumstance is traceable to the indifference of the public to partial and inconsiderable changes, which are unseen in the ocean of Botanical nomenclature. That they are important must be admitted; that the person most careless as to the difficulties of articulation would prefer to speak of a Fringe-Myrtle rather than of a *Chamaelaucium*, or of a Grit-

berry than of a *Comarostaphylis*, will probably be allowed on all hands; and therefore the Author does not confess discouragement at failure; but would rather invite suggestions as to more probable means of success. Mere translation is neither necessary nor desirable in all cases. Many Latin names have, from custom, been adopted into the English language, and no wisdom would be shown in attempting to alter such words as *Dahlia*, *Crocus*, *Ixia*, or even *Orchis*. Others again are so easily sounded, and so much in harmony with the English tongue, that nothing could be gained by interfering with them; such as *Penæa*, *Hugonia*, *Parkia*, *Mimosa*, *Arbutus*, &c. And, finally, there is a large class of scientific words which are best Englished by an alteration of their foreign terminations; for example, *Melanthium* may be changed to *Melanth*; *Desmanthus* to *Desmanth*; *Lecythis* to *Lecyth*; *Myrospermum* to *Myrosperm*; and such an alteration would at once possess the great advantage of rendering English plural terminations possible. *Melanthiums*, *Desmanthuses*, *Lecythises*, &c., sound offensively to classical ears; *Melanthia*, *Desmanthi*, *Lecythides*, are, if not pedantic, at least beyond the skill of uneducated readers; but *Desmanths*, *Melanthis*, and *Lecyths*, are formed by the ordinary English plural termination without difficulty."

There can be no question but that the more points we can bring to guide us, in the classification of plants, the more likely we are to be correct; and we can trace the advantage of the Natural System, in observing the most ignorant gardener guessing at the family of a new plant not in flower. Not that he may be right; but we, nevertheless, see him turning over the leaf, examining the stem, noticing every point, and, in some cases deciding, at least in his own mind, that it is like, or unlike, what he has seen before. He may be right in the family to which he assigns it, if his memory be good, or the plant indicates strongly by its habit to which it belongs; whereas, if he depended entirely on the flower, he must wait until he obtains that evidence, and would not trouble himself to look at the foliage or stem. The very man who is, perhaps, thus practically showing the advantage of a well-arranged Natural System, would, if he were asked, repudiate it altogether; though he shows, by his own acts, that he is in want of it. The more points, then, that we are acquainted with the better; and the more we are taught to apply the most trifling features in the construction of a plant, to judge of its family, the less dependent are we upon the seasons, or the state of the subject we examine. Let us then consider in what manner we are to appropriate our knowledge of the organs of a plant, and its habit and peculiarities. In judging of the

family to which it belongs, the author of *The Vegetable Kingdom* says, —

“The first office which all organized beings have to perform is that of feeding ; for it is thus only that their existence is maintained. The second is that of propagating, by means of which their species is perpetuated. These being functions of the highest importance, it is reasonable to conclude that the organs provided for their proper execution must be of the highest importance also, and hence that they are beyond all others valuable for the purposes of classification. And, again, because the power of feeding must come before that of propagating, it might be conjectured beforehand that the organs destined for the former operation would afford the first elements of a Natural method. But since the action of feeding is very simple in the Vegetable Kingdom, because of the similar modes of life observable among plants, while, on the contrary, the act of propagation is highly diversified, on account of the very varied nature or structure of the parts by which it is accomplished ; so might we conjecture that the organs of nutrition would afford but few distinctions available for purposes of classification, while those of fructification would furnish many. And such is the fact. Hence it is that the great classes of plants are principally distinguished by their organs of growth, and that in the numerous minor groups such peculiarities are comparatively disregarded, their chief distinctions being derived from their parts of reproduction. These principles are more fully expressed in the following axioms :—

“1. Peculiarities of structure which are connected with the manner in which a plant is developed are *physiological* ; those which are connected with the manner in which parts are arranged are *structural*. Physiological characters are of two kinds, viz., those which are connected with the *mode of growth* (*the organs of vegetation*), and those which regulate *reproduction* (*the organs of fructification*). Physiological characters are of greater importance in regulating the natural classification of plants than structural.

“2. All modifications of either are respectively important, in proportion to their connection with the phenomena of life.

“3. If we allow ourselves to be steadily guided by these considerations, we shall find that the internal or anatomical structure of the axis, and of the foliage, is of more importance than any other character ; because these are the circumstances which essentially regulate the functions of growth, and the very existence of an individual.

“4. That next in order is the internal structure of the seed, by which the species must be multiplied. Thus the presence of an

embryo, or its absence, the first indicating a true seed, the latter a spore, are most essential circumstances to consider. And so also the existence of albumen in abundance round the embryo, or its absence, must be regarded as a physiological character of the highest value : because, in the former case, the embryo demands a special external provision for its early nutriment, as in oviparous animals ; while, in the latter case, the embryo is capable of developing by means of the powers resident in itself, and unassisted, as in viviparous animals.

“5. Next to this must be taken the structure of the organs of fructification, by whose united action the seed is engendered ; for without some certain, uniform, and invariable action on their part, the race of a plant must become extinct. Thus we find that the structure of the anthers, placentæ, and ovules, are more uniform than that of the parts surrounding them, while their numbers are variable ; and the condition of the filament, which appears of so little importance in a physiological point of view, is also inconstant. So also the texture and surface and form of the pericarp, which acts as a mere covering to the seeds, are not to be regarded in these inquiries, and, in fact differ from genus to genus ; as, for instance, between *Pyrus* and *Stranvæsia*, or *Rubus* and *Spiræa*, in the truly natural Rosaceous Order.

“6. On the other hand, the floral envelopes seem to be unconnected with functions of a high order, and to be designed rather for the decoration of plants, or for the purpose of giving variety to the aspect of the vegetable world ; and, consequently, their number, form, and condition, presence or absence, regularity or irregularity, are of low and doubtful value, except for specific distinction. There seems, indeed, reason to expect that every Natural Order will, sooner or later, be found to contain within itself all the variations above alluded to. Even in the cases of regularity and irregularity we already know this to be so ; witness *Veronica* and *Scoparia* in Figworts, and *Hyoscyamus* in Nightshades, *Delphinium* in Crowfoots, and *Pelargonium* in Cranesbills.

“7. The consolidation of the parts of fructification is a circumstance but little attended to in a general point of view, except in respect to the corolla ; but as it seems to indicate either the greatest change that the parts can undergo, or, where it occurs between important and usually unimportant organs, that in such cases the latter become essential to the former, it probably deserves to be regarded with great attention. For instance, the presence or absence of the corolla is often a point of little moment, and is, we know, a very fluctuating circumstance. This is especially true of those Natural Orders in which the stamens and

petals are separated ; as in Roseworts, Rhamnads, Onagrad, &c. On the other hand, when the stamens, which are indispensable organs, adhere to the petals, the latter are more constantly present, as in Figworts, Acanthads, Nightshades, &c.”—*Introd.* xxvi. xxvii.

It will be seen by this portion of the introduction, that a foundation is laid for a sound practical knowledge of systematic botany, but that it will take considerable time to become master of even the rudiments. In our opinion, the system itself, improved as it is by Professor Lindley, is but in its infancy, and much has yet to be done. Nor are we to forget that Linnæus, who saw the deficiency of his first labour, commenced the task of forming a natural, as well as his artificial, or Linnæan, system ; so that the honour of founding the natural orders is not to be snatched from the great master-mind altogether. The author of *The Vegetable Kingdom* does not omit a fair mention of the originator. He says, in his introduction :—

“When Linnæus attempted to form a Natural System, he merely threw together such genera as he knew into 67 groups, which he called Fragments, and which were equivalent to the Natural Orders of Modern Botany. Jussieu advanced a step further, by forming 15 Classes, under which he placed 100 Natural Orders. At a later period the name Class was reserved for the three great divisions of Acotyledons, Monocotyledons, and Dicotyledons ; and the Orders were collected into smaller groups called Sub-classes ; and thus, by degrees the necessity of forming three grades of distinctive characters superior to genera was recognised. But our countryman, Dr. Robert Brown, whose sagacity is not the least remarkable part of his scientific character, long ago pointed out the insufficiency of even this amount of subdivision, and proposed the combination of Natural Orders into groups intermediate between Orders and Sub-classes. The necessity of this measure is now universally acknowledged ; attempts have been made for some years, by various Botanists, to work out the problem ; and I think it must be conceded that a real advance has thus been made, by the efforts of various independent observers, to the accomplishment of so very desirable an object. To such attempts the present work is an addition.”—P. xxix.

There can be no question but that the author has done much to reconcile the admirers of Linnæus to the more modern and comprehensive system ; that he has done no small service in removing difficulties and reconciling differences ; and the great question at issue between the two great parties in the botanical world is to be described in few words—the one decides all things by that which can only be got at in particular seasons ; the other, by affinities that are to be found at all times, any

of which, in many cases, would enable us to assign a totally strange plant to the family to which it belongs, and, perhaps, to the very branch of its family. But there is one evidence of family connexion that must not be lost sight of, as it is unequivocal, and, in practical gardening, comes daily under our notice. We allude to the capacity of fertilization ; and when one presumed species will fertilize with another, and the produce will perfect its seed, we have scarcely any right to view them as of distinct genera. They may be very unlike each other in habit, in locality, in colour, and in many other respects, but, looking at nature throughout, they can only be regarded as members of the same large family. A good deal of the introduction to this volume is occupied in the discussion of the question which has been long and often mooted in the animal as well as vegetable kingdom, the difficulty of drawing a line of demarcation between some of the natural orders. On this subject the author observes :—

“It may be, and certainly is in some measure, true, that insuperable difficulties are, in the present state of our knowledge, opposed to strict definitions of Natural Orders, and *à fortiori* of their Alliances, &c. But that is no reason why we should not endeavour to render their distinctive characters as precise as the nature of the subject will permit. Vague distinctions, which are at once the bane and opprobrium of Natural History, are so repulsive to the understanding as to deter the mass of mankind from giving it their attentive study. And it is not too much to assert that this vagueness arises more frequently out of the prejudices or mistiness of the Naturalist’s own mind than out of things themselves. It will constantly happen that two groups may stand, by common consent, in the nearest conceivable relation to each other : it is quite possible, by one way of arranging them, to render their distinctions nugatory, and by another, clear and precise. Now, if the supposed groups are really as closely allied, as for this argument we may assume them to be, it can be of no possible importance, theoretically, whether a given Genus or Order is placed in the one or the other. The near consanguinity of the two does away with all importance in such a case. In Physical Geography it is of no consequence whether London is stationed in Middlesex or Surrey ; and in like manner, in Theoretical Botany, the place of a given Order may be equally indifferent. But it may be of great consequence practically, because a definition of limits may be possible or not, according to the arrangement. For example, let us take the Solanæ and Bignoniacæ Alliances. These touch at the Orders of Nightshades and Figworts respectively. If Nightshades are

placed in the Bignonial Alliance because of their intimate relation to Figworts, no apparent means remain of clearly defining what is meant by the Bignonial Alliance. If, on the other hand, Figworts are stationed in the Solanal Alliance, then the distinctive characters of that Alliance are also rendered obscure and difficult, or impossible of application. But place Night-shades in the Solanal, and Figworts in the Bignonial Alliance, and the language of Botanists affords as clear a discrimination as can be wished for. And so of other cases. Indeed, I am so persuaded of this, that in my opinion all instances of confused and vague characters are only so many proofs of Botanists not having clearly understood the plants that they have endeavoured to classify.

"It will, perhaps, be alleged that the doctrine just inculcated is directly opposed to the first principles of a Natural System: but such is not the case. No absolute limits, in fact, exist, by which groups of plants can be circumscribed. They pass into each other by insensible gradations, and every group has apparently some species which assumes in part the structure of some other group. Two countries are separated by a river whose waters are common to both banks: in a geographical division of territory the river may be assigned to either the left bank or the right bank, but such an arrangement is arbitrary; and yet the interior of the countries is unaffected by it. So with the groups of plants; it cannot be of any possible consequence whether an intermediate or frontier plant be assigned to one group or another, and convenience alone should be considered in such a matter. This long since led me to offer the following observations, the justice of which, much more experience entirely confirms:—'All the groups into which plants are thrown are in one sense artificial, inasmuch as Nature recognises no such groups. Nevertheless, consisting in all cases of species very closely allied in nature, they are in another sense natural. But as the Classes, Sub-classes, Alliances, Natural Orders, and Genera of Botanists, have no real existence in nature, it follows that they have no fixed limits, and consequently that it is impossible to define them. They are to be considered as nothing more than the expression of particular *tendencies* (*nixus*), on the part of the plants they comprehend, to assume a particular mode of development. Their characters are only a declaration of their prevailing tendencies.'"—P. xxix. xxx.

Professor Lindley proceeds to give an outline of all the Natural Systems. Those of John Ray, 1703, Linnæus, 1751, Jussieu, 1789, Brown, 1810, De Candolle, 1813, Agardh, 1825, Perleb, 1826, Dumortier, 1827, Bartling, 1830, John Lindley, 1830, Hess, 1832, Schultz, 1832, John Lindley, 1833, Horaninow,

1834, Fries, 1835, Martius, 1835, Bromhead, 1836, John Lindley, 1836, Endlicher, 1836-1840, John Lindley, 1838, Perleb, 1838, John Lindley, 1839, Baskerville, 1839, Trautvetter, 1841, Brongniart, 1843, Meisner, 1843, Horaninow, 1843, Jussieu, jun. 1844, John Lindley, 1845, which is the present work. In this list the same authors appear when they have made any alterations in their previous works. The arrangements of them all differ in some particulars, and an analysis of their several arrangements shows, at least, that while Linnæus' artificial arrangement is allowed to remain as it was, the Natural Systems have been not only revived by different authors, but they have undergone many changes by the writers themselves, who, as new objects and new facts were developed, saw good reason, we presume, for the variations they have made from time to time. It is but fair to say, that among all these systems, Professor Lindley has, in this last arrangement, done all that can, at present, be done, to advance in what, at present, appears a right path. The system employed in the present volume is more comprehensive than any of its predecessors. It is altogether different from his own arrangement of 1833, in *Nixus Plantarum*. The classes in which were:—

CLASSES.

Sexuales	{ Vasculares	I. EXOGENÆ. ANGIOSPERMÆ.
		II. EXOGENÆ. GYMNOSPERMÆ.
	{ EVASCULARES	III. ENDOGENÆ.
V. ESEXUALS.		IV. RHIZANTHÆÆ.

The classes in the present volume amount to seven, and are given as under:—

CLASSES.

Asexual or Flowerless Plants.

Stems and leaves undistinguishable	I. THALLOGENS.
Stems and leaves distinguishable	II. ACROGENS.

Sexual or Flowering Plants.

Fructification springing from a thallus	III. RHIZOGENS.
Fructification springing from a stem	
Wood of stem youngest in the centre; cotyledon single.	
Leaves parallel-veined, permanent; wood of the stem always confused	IV. ENDOGENS.
Leaves net-veined, deciduous; wood of the stem, when perennial, arranged in a circle with a central pith	V. DICTYOGENS.
Wood of stem youngest at the circumference, always concentric; cotyledons two or more.	
Seeds quite naked	VI. GYMNOGENS.
Seeds enclosed in seed-vessels	VII. EXOGENS.

The ramifications are as important; they are carried out to fifty-six Alliances, and three hundred and three Natural Orders: each of these is described with great precision, and are again broken into Sections, or Tribes, or Sub-orders; and every leading subject is beautifully illustrated, some, it is true, with engravings, which we must not respect the less for

being old acquaintances. They are for the most part very accurately and finely executed, and give a perfect insight into all the complicated organization of the apparently most trivial, but, thus illustrated, they become most important, subjects, for their diminutiveness renders their structure the more wonderful. *The Vegetable Kingdom* opens with the very lowest order of plants; but it is preceded by a discussion upon the subject of the particular line at which the Animal Kingdom ends and the Vegetable begins; and we are tempted to quote a portion of it, as it takes some views not quite so common-place as those of many other authors; and the conclusion which is drawn comes home to the reader.

"When the Animal Kingdom is studied as a vast whole, and not merely in the highly-developed classes of Mammals, Birds, and Reptiles, the naturalist perceives forms with which he is most familiar gradually changing, organs which are indispensable to the highest orders of Animals disappearing, the limbs ceasing to be formed, all the internal structure of the body simplified, and, at last, nothing left but pulpy and seemingly shapeless masses, such as inhabit shells. Let his power of vision be enlarged, and the microscope discovers to his amazement, that the Animal Kingdom has not ceased with the soft-bodied creatures at which his inquiry had stopped, but that a new and vast field of observation opens before him, teeming with myriads of forms, which are, as it were, the beginning of another kingdom of nature. Nevertheless, he soon finds that the smallness of the size of these creatures is no hindrance to their possessing the peculiar attributes of animal life. Though bones, and muscles, and external limbs, with veins, arteries, and nerves, may have disappeared, or become too fine for human vision, yet there is still left the animal motion, and the power of hunting for prey, of feeding by a mouth and by the destruction of other species, which is one of the great marks of animal structure. He sees that cells, although so small that the acutest vision and the most powerful instruments are alone sufficient to detect them, are the recipients of a stomach, of eyes, of a mouth. He perceives in such bodies all those elements of activity, by which the Animal Kingdom is in general so well distinguished from the passive Region of plants.

"And hence it is that those who deal in generals only, without descending to particulars, pronounce with a voice of authority that the Animal and Vegetable Kingdoms are sundered by decisive characteristics. The zoologist declares that the power of spontaneous motion, and the feeding by a stomach, are qualities confined to the Animal Kingdom. But numerous plants move with all the appear-

ance of spontaneity; the spores of those Con-fervæ which are sometimes called Zoosporous, swim in water with great activity; the filaments of Zygnemata combine with the energy of animal life; and as for a stomach, it is impossible to say, that the whole interior of a living independent cell is not a stomach. Chemists once referred to the presence of nitrogen as a certain characteristic of animals; but plants abound in nitrogen. With more reason they now appeal to the existence of starch in plants, an organic compound unknown among the animal creation. And this is perhaps the best mark of distinction that has hitherto been found; for it is universally present in plants, and has enabled Mr. Payen to confirm by chemical evidence the vegetable nature of certain productions till lately regarded as Zoophytes, and therefore as belonging to the Animal Kingdom. (*Ann. Sc. Nat.* 2 ser. xx. 65.)

"But it has been long ago asserted by Bory de St. Vincent, and others, that there exist in nature organized bodies which are animal at one period of their lives, and vegetable at another! This, if true, would for ever put an end to the possibility of distinguishing the two kingdoms when they shall each have arrived at their lowest forms. Its truth has, however, been denied. On the contrary, Kützing, in his recent magnificent work on Algæ, insists that it happens in his *Ulothrix zonata*. He asserts that in the cells of that plant there are found minute animalcules, with a red eye-point, and a transparent mouth-place; that they are not, in fact, distinguishable from Ehrenberg's *Microglæna monadina*; these bodies, however, are animals only for a time. At last they grow into vegetable threads, the lowest joint of which still exhibits the red eye-point. This phenomenon, which Kützing assures us he has ascertained beyond all possibility of doubt, puts an end to the question of, whether animals and plants can be distinguished at the limits of their two kingdoms, and sufficiently accounts for the conflicting opinions that naturalists entertain as to the nature of many of the simpler forms of organization.

"Such being the case, it is not worth attempting to decide, whether the lowest forms of structure, to be presently mentioned, belong to the one Kingdom or the other. It will be sufficient that they have been regarded as plants by many eminent naturalists.

"It is in this microscopical cellular state of existence that the Animal Kingdom ends, and the Vegetable commences. It is from this point that the naturalist who would learn how to classify the Kingdom of Plants must take his departure. He perceives that those species which consist of cells, either independent of

each other (*Protococcus*, *Uredo*), or united into simple threads (*Conferva*, *Monilia*), are succeeded by others in which the threads collect into nets (*Hydrodictyon*), or plates (*Ulva*), or the cells into masses (*Laminaria*, *Agaricus*); peculiar organs make their appearance, and at last, as the complication of structure increases, a leaf and stem unfold as distinctly limited organic parts.

"Those simpler plants which exist without the distinction of leaf and stem, are also destitute of flowers; they are equally without the breathing pores so abundantly formed in the skin of more complex species, and they multiply by the spontaneous formation in their interior, or upon their surface, of reproductive spheroids called spores. Among the many names that Botanists have given such plants, that of THALLOGENS is here preferred. A thallus is a fusion of root, stem and leaves, into one general mass; and that is much the nature of these elements of Vegetable structure.

"Beyond Thallogens are found multitudes of species, which like the former are not furnished by nature with flowers, but which otherwise approach closely to the higher forms of structure, occasionally acquiring the stature of lofty trees. They have breathing pores in their skin; their leaves and stem are distinctly separated; in some of them, those spiral threads which form so striking a portion of the internal anatomy of a more perfect species exist in considerable abundance; and finally, they multiply by reproductive spheroids, or spores, either formed without the agency of sexes, or, if the contrary shall be proved, at all events not possessing bodies constructed like stamens on the one hand and embryos on the other. Their stem, however, does not increase in diameter; it only grows at the end, and hence it has given to such plants the name of ACROGENS.

"The changes which thus occur in the races of Thallogens and Acrogens represent the progress of development in the remainder of the Vegetable Kingdom. A sphere, called a pollen grain, protrudes a tube into a soft pulpy receptacle in the interior of an ovule; there the new plant takes its birth, at first in the form of a cell, which by degrees forms a thread (the suspensor), then generates a cellular mass (the young embryo), and eventually becomes a mass of cells arranged in the form of stem and leaves (the perfect embryo, with its cotyledons, radicle, and plumula). But this is not the end of growth; it is rather the beginning. A loftier destiny awaits such plants; flowers are to be formed, seeds to be fertilized, and this is to be effected by a complex apparatus unknown in Acrogens or Thallogens.

"Foremost among the more perfect races comes a most anomalous collection of species,

called RHIZOGENS, or Rhizanthus. These plants, leafless and parasitical, have the loose cellular organization of Fungi; a spiral structure is usually to be found among their tissue only in traces. Some of them spring visibly from a shapeless cellular mass which stands in place of stem and root, and seems to be altogether analogous to the thallus of Fungi; and it is probable, that they all partake in this singular mode of growth. Their flowers are like those of more perfect plants; their sexual apparatus is complete; but their embryo, which is not furnished with any visible radicle or cotyledons, appears to be a spherical or oblong homogeneous mass. Rhizogens seem, in fact, of an intermediate nature between Fungal Thallogens and Endogens.

"The remainder of the Vegetable Kingdom consists of plants having flowers, and propagated by seeds; that is to say, by bodies procreated by the mutual action of two manifest and undoubted sexes. Such plants are therefore called PHÆNOGAMOUS or SEXUAL.

"Sexual plants are themselves divisible into two unequal masses. Of these masses one consists of species whose germination is endorhizal, whose embryo has but one cotyledon, whose leaves have parallel veins, and whose trunk is formed of bundles of spiral and dotted vessels guarded by woody tubes; which bundles are arranged in a confused manner, and are reproduced in the centre of the trunk. These are ENDOGENS.

"The other mass is composed of innumerable races having an exorhizal germination, an embryo with two or more cotyledons, leaves having a net-work of veins, and a trunk consisting of woody bundles composed of dotted and woody tubes, or of woody tubes alone, arranged around a central pith, and either in concentric rings, or in a homogeneous mass, but always having medullary plates, forming rays from the centre to the circumference, and reproduced in the circumference of the trunk, whence their name of EXOGENS.

"Among Exogens there are, however, two totally different modes in which the influence of the pollen is communicated to the seed. The larger part of this great class consists of plants provided with the apparatus called style and stigma, through which pollen-tubes are introduced into the ovary during the act of fertilization. But others are so constructed that the pollen falls immediately upon the ovules, without the introduction of any intermediate apparatus; a peculiarity analogous to what occurs among reptiles in the Animal Kingdom: and, as was to have been anticipated, the plants in which this singular habit occurs prove, upon being collected together, to form a group having no direct affinity with those among which they had been previously asso-

ciated. Hence Exogens have been broken up into, 1. *Exogens* proper, or those having an ovary, style, and stigma; and 2. *GYMNOGENS*, which have neither.

"Among Endogens no difference has been remarked in the mode of propagation, but a material peculiarity has been noticed in the manner of growth. In the great mass of the class the stem and root are formed in a similar way, or there is no considerable difference between them, and the leaves have no articulation with the stem; but in a part of them the root is exactly like that of an Exogen without concentric circles, and the leaves fall off the stem by a clean fracture, just as in that class. Such fundamental distinctions have given rise to the separation by me of Endogens into 1. Endogens proper, and 2. *DICTYOGENS*."

—P. 1—4.

This, as the author observes, gives for the whole vegetable kingdom the seven classes which we have already quoted, to show the difference between the same author's notions in 1833 and 1845. At some other period we may give a specimen of some one order, with its details, but for the present we must dismiss the work, which we acknowledge to have read with considerable interest. In conclusion, we strongly recommend all those who desire to be made acquainted with the merits of the *Natural System*, to procure and carefully peruse this volume. It comprises all that has been, or that, in the present state of things, can be said upon the subject. The embellishments of each order are finely executed; and it has the merit of being more intelligible and instructive than any other we have seen on the subject.



NEW ORCHIDACEOUS PLANTS,

INTRODUCED OR MADE KNOWN DURING 1845-6.

Odontoglossum Cereantese.

THE species of this fashionable and interesting family of plants, which are enumerated below, have been introduced to our gardens, or have been made known subsequently to the commencement of the year 1845. Some of the kinds here named, are exceedingly beautiful ones; but others are possessed only of botanical interest.

AERIDES SP.—Two new species of *Aerides* were flowered during the last summer, by Mr. Eyles, of Roehampton. One, the *A. roseum* of Messrs. Loddiges, with a long narrow raceme of purple flowers, is in the way of *A. affine*. The other more nearly resembles *A. crispum*. They were exhibited at Chiswick.

ANGRÆCUM APICULATUM, *Hooker*. (*Apiculated Angraecum*.)—This is rather a handsome species, with a short leafy stem; the leaves are obovately-lanceolate, and distichous, that is, arranged in two rows, opposite each other. The flowers are borne in a drooping axillary raceme; they are white and spreading; the sepals, petals, and lip, are nearly uniform. It is allied to *A. bilobum*, but differs

in not having its leaves two-lobed at the extremity; and in not having the rachis and peduncle warted. It is a native of Sierra Leone, and was introduced by Mr. Whitfield. Fig. in *Bot. Mag.* t. 4159. Quite new.

ANGULOA UNIFLORA variety. (One-flowered *Anguloa*.)—A superior variety of this rare plant, with delicate pink instead of cream-coloured flowers, is grown by Messrs. Veitch, who exhibited it in the Regent's Park during 1845.

ANSELLIA AFRICANA, *Lindley*. (*African Ansellia*.)—This is a very rare stove plant, introduced from Fernando Po, in Africa, and named after the gardener who was attached to the unfortunate Niger expedition. It has long erect stem-like pseudo-bulbs, from the top of which and from among the long narrow leaves, the flower-stalk arises. This is branched at the base, and somewhat drooping; and has altogether a very elegant appearance. The flowers are of a greenish ground colour, thickly marked with dark-brown spots, and the lip is yellow. Messrs. Loddiges have recently bloomed the first plant which has been seen in flower in Europe. Fig. in *Bot. Reg.* 1846, t. 30.

BOLBOPHYLLUM UMBELLATUM, *Lindley*. (Umbelled Bolbophyll.)—This is one of the smaller Orchids, introduced from the mountains of India. It has a creeping rhizoma, or root-stem, from which the pseudo-bulbs are produced at intervals; they are terminated by a solitary leaf, and from their base rises the flower-stem, about as high as the leaves; at the top of which is an umbel of five or six small, pretty, pale, straw-coloured flowers, spotted with purple, and with a purple lip. It may either be grown in pots, or attached to blocks of wood; and its small size and neat appearance render it suitable for the Wardian case. Fig. in *Bot. Reg.* 1845, t. 44.

BRASSIA PUMILA, *Lindley*. (Dwarf Brassia.)—This may be a variety of *B. Lancaena*. It has pale yellow flowers, stained with dull-purple at the base of the petals. The plant is remarkable for its dwarfness. It was recently introduced from Colombia, by Mr. Linden.

CATASETUM CALLOSUM, *var. grandiflorum*. (Large flowered variety of the tumour-lipped Catasetum.)—This handsome stove epiphyte has oblong pseudo-bulbs, with large leaves, a foot or more in length from their top, and a flower scape a foot or more in length from their base. The sepals and petals are linear lanceolate, of a dull greenish purple, and the lip of an ovate-deltoid figure, variegated with dark green and red purple, sprinkled with deep blood-coloured dots. It is from Colombia; and flowers in December. It is fig. in *Bot. Mag.* t. 4219, and is quite new.

CATTLEYA GRANULOSA, *var. Russelliana*, *Lindley*. (Duke of Bedford's rough-lipped Cattleya.)—This is a very fine variety of *C. granulosa*, having much larger flowers; of which the sepals are lance-shaped, green, with brown spots; the petals of nearly the same colour, but broader, and wavy, and the lip white, with yellow and red spots. This plant is suspected to be common in collections, where it often stands for *C. guttata*, from which it is however quite distinct. It is a Guatemalan plant. Many handsome varieties of this plant have recently flowered at Messrs. Knight and Perry's Exotic Nursery, Chelsea: in some the petals and sepals resemble *Cattleya Forbesii*, both in size and colour, in others the flowers are large, with dark green sepals and petals; some have these parts pale yellow, covered with brown spots and blotches, as in *C. Aclandiae*; but all have remarkably large lips, marked, for the most part, with pale or dark red, on a whitish ground. Fig. in *Bot. Reg.* 1845, t. 59.

CATTLEYA MAXIMA, *Lindley*. (Large flowered Cattleya.)—This is a handsome kind, with club-shaped long pseudo-bulbs, short broad leaves, and large showy flowers; remarkable

"for the dark crimson veins richly traced upon its pallid lip, and for a beautiful network of purple streaks, which is drawn over their surface." This plant approaches *C. Mossie* and *C. labiata*, but is quite distinct. When the flowers open they are very pale, but gradually acquire a deeper tint, until they become of a rich purplish rose. The lip is beautifully undulated, and veiny. The flowers, though large, have this defect, that the sepals and petals reflex so as to appear convex and narrow; they are moreover wavy. It was found by Mr. Hartweg, on rocks and trees, near Rio Grande de Melacatos, in Equatorial America. Fig. in *Bot. Reg.* 1846, t. 1. It is quite new.

CATTLEYA PAPEIANSIANA, *Morren*. (Papeiansi's Cattleya.)—A slight variety of *C. Loddigesii*.

CHLORÆA VIRESCENS, *Lindley*. (Greenish-veined Chloræa.)—A handsome terrestrial Orchid from the sub-alpine pastures of the Cordilleras of Chili. It is a handsome plant, with dense spikes of large yellow flowers, growing a foot or more in height. It requires to be grown in a warm green-house, and blooms in May. The most suitable soil is sandy peat. Fig. in *Bot. Reg.* 1845, t. 49. It is very rare in cultivation.

CLEISOSTOMA DISCOLOR, *Lindley*. (Dull-coloured Cleisostoma.)—A small inconspicuous Orchid, with oblong channelled leaves; the flowers are dull yellow with a green tinge, and white spur, on a long slender stem, which is branched at the extremity. It was introduced from India.

CLEISOSTOMA ROSEUM, *Lindley*. (Rose-coloured Cleisostoma.)—This has long pendent stems, with ovate lance-shaped leaves, and producing clusters of small pretty whitish and rosy flowers at every joint.

CÆLOGYNE SPECIES.—Messrs. Henderson have recently flowered a dwarf species, which in general character resembles *C. Wallichiana*. The petals are delicate lilac, and the lip beautifully fringed, and marked with several spots of yellowish brown.

CYMBIDIUM MASTERSII, *Griffiths*. (Masters's Cymbid.)—A terrestrial Orchid, with long narrow distichous leaves, and erect short spikes of snow-white flowers, which have the fragrance of almonds. It is very distinct, but not remarkably showy. Received from the East Indies. Fig. in *Bot. Reg.* 1845, t. 50.

CYPRIPEDIUM BARBATUM, *vars.* (Bearded Lady's Slipper.)—Of this handsome stove-plant, Messrs. Veitch of Exeter possess two very marked and beautiful varieties. They are herbaceous plants, with short leaves of a dark mottled green, purple beneath; in one of the varieties, the flowers are of a beautiful rich deep purple, much darker than the

species; in the other, they are much paler than in the species. They have been imported from Java; and bloom in the spring.

DENDROBIUM ANOSMUM, Lindley. (Scentless Dendrobe.)—This is perhaps only a variety of the handsome *D. macrophyllum*. Its flowers are smaller, and shorter, and broader in all their parts; even, and not undulating; scentless, and consequently free from the strong odour of rhubarb, which renders the flowers of *D. macrophyllum* somewhat disagreeable to the olfactory nerves. It is from the Philippine Islands, and was introduced thence by Messrs. Loddiges, in 1840. It is new.

DENDROBIUM ADUNCUM, Wallich. (Hooked Dendrobe.)—A very pretty little stove species, with pendent stems and short racemes of three or four small delicate pink flowers, which open in July. Its half-transparent flowers, of the most delicate texture, and of the clearest tints, are very pretty. Nothing is known of its history; it is fig. in *Bot. Reg.* 1846, t. 15, and is new.

DENDROBIUM FIMBRIATUM, var. oculatum. (Dark-eyed variety of the Fringe-lipped Dendrobe.)—This is a truly splendid plant; it has stems a foot and a half long, from which the racemes of six or seven large and handsome golden flowers are produced. This variety is rendered conspicuous by the dark blood-coloured spot on the lip, which contrasts well with the bright gold colour of the other parts of the flower. It is from Nepal. Fig. in *Bot. Mag.* t. 4160.

DENDROBIUM KINGIANUM, Bidwill. (Capt. King's Dendrobe.)—This is one of the smaller Dendrobia, the plant not being above six or eight inches high. It is nevertheless exceedingly pretty, producing an elongated pseudo-bulbous stem, with a few leathery elliptic oblong leaves at the top, terminated by a spreading spike of three or four pinkish rose-coloured flowers, in shape a good deal like a Larkspur. It is from New Holland; the early part of the spring appears to be the usual season of flowering. Fig. in *Bot. Reg.* 1845, t. 61.

DENDROBIUM SCHENKINUM, Lindley. (Fluted Dendrobe.)—This is a curious little stove or green-house epiphyte, with slender-jointed stems, terete fluted leaves, and solitary white flowers, the lip three-lobed, and edged with crimson. In its growth it resembles a little Bamboo; it is often erroneously called *D. canaliculatum*; it was received from New Holland by Messrs. Loddiges, and is new to our gardens.

EPIDENDRUM DIPUS, Lindley. (Two-footed Epidendrum.)—A species of no great beauty, imported by Messrs. Loddiges from Brazil, and bearing densely clustered drooping panicles of small sweet-scented flowers, green,

brown, and white. Fig. in *Bot. Reg.* 1845, t. 4.

EPIDENDRUM NÆVOSUM, Lindley. (Freckled Epidendrum.)—A pretty little stove epiphyte, with oval pseudo-bulbs and lanceolate leathery leaves, about three inches long; the scape is erect, bearing a drooping raceme of flowers, which continue in bloom upwards of two months; the sepals and petals are white, the lip yellow, with numerous purple freckles. It was received from Oaxaca by Mrs. Lawrence, and is quite new.

EPIDENDRUM RUFUM, Lindley. (Rufous Epidendrum.)—This is allied to *E. flavum*; it has large pear-shaped pseudo-bulbs, from the top of which the flower-scape, eighteen inches high, proceeds, bearing a profusion of brownish yellow flowers in a loose panicle. It is from Rio, whence it was sent to the garden of Sir C. Lemon, of Carclew.

EPIDENDRUM MARGINATUM, Link, etc.—This is the *Ep. radiatum* of the *Bot. Reg.*

EPIDENDRUM LINDENII, Lindley. (Linden's Epidendrum.)—A beautiful Orchid, discovered in rocks near Merida by Mr. Linden. It has a simple upright stem, with oval obtuse leaves, and the flowers in an oblong raceme. The sepals and petals are of a dull but pleasing salmon-colour, and the whole centre rose-coloured. Mr. Linden found three distinct varieties; in one the flowers were bright carmine, in another rose-coloured, and in the other of a yellowish orange. It is a handsome new species.

ERIA DILLWYNII, Hooker. (Dillwyn Llewelyn's Eria.)—This is a pseudo-bulbous species, of moderate sized growth, with about four oblong obtuse leaves, and spike-like upright racemes of flowers, remarkable for having the stem numerous furnished with obtuse reflexed pale-coloured bracteas throughout its whole length. The flowers are small, greenish white, or cream-coloured, not very showy, although, from their being numerous produced, the plant is worth cultivating. It is from the Philippine Islands, whence it was sent by Mr. Cuming to D. Llewelyn, Esq. of Penllergare. Fig. in *Bot. Mag.* t. 4163. It is new.

GONGORA TRUNCATA, Lindley. (Bean-budded Gongora.)—A handsome pseudo-bulbous species, producing long drooping spikes, beset, as if by insects, with pale straw-coloured flowers, with some brownish purple specks and a clear yellow lip. Before they open, the buds are of the shape of a bean; it has a peculiar but not pleasant scent; it is a native of Mexico; it is probably the same plant as *G. Galeottiana*, and is new to our gardens. Fig. in *Bot. Reg.* 1845, t. 56.

GOVENIA UTRICULATA, Lindley. (Bladdery Govenia.)—One of the terrestrial Orchids.

The leaves are broad, oblong, and pointed, a foot and more long; the base of these is inclosed by a membranaceous inflated sheath, which seems destined to hold water for the supply of the plant. From between the leaves arises the erect flower-stem, a foot and a half high, forming a loose spike of small cream-coloured flowers, not at all showy. It is from Jamaica, and flowers in September. Fig. in *Bot. Mag.* t. 4151.

GOVENIA FASCIATA, *Lindley*. (Linden's Govenia.)—This is a terrestrial species, with leaves about a foot long and three inches wide, and narrow upright spikes of rather pretty flowers, which are yellow, both the sepals and petals being beautifully marked with fine broken transverse bands of crimson. It was found by Mr. Linden in Venezuela, in damp forests, at the height of 5,000 feet above the sea, in July, 1842, and has been flowered by S. Rucker, Esq. of Wandsworth. Fig. in *Bot. Reg.* 1845, t. 67. New.

HELICIA SANGUIOLENTA, *Lindley*. (Red spotted Helcia.)—A small plant, allied to *Trichopilia*, with ovate pseudo-bulbs, undulated narrow leaves, and solitary flowers, produced on stems proceeding from the base of the bulb. The flowers are olive-coloured, with brownish red spots, the lip white and marked. It is from Paccha, a village in the Andes of Guayaquil, where it was found by Mr. Hartweg.

LYCASTE FULVESCENS, *Hooker*. (Tawny-flowered Lycaste.)—A pseudo-bulbous species, with the habit of *L. gigantea*, but different in the size and colour of the flowers, which in this are a pale tawny colour, with an orange coloured lip, but in *L. gigantea* are greenish brown, with a red purple lip. The leaves are from the summit of the pseudo-bulbs, and the flowers, one on each stalk, rise from the base of the bulb; the sepals are lanceolate, the lateral ones longest; the petals are of the same form and colour, but smaller; the lip is oblong, beautifully fringed with hairs. It is a native of the province of Coro, in Colombia, and has been recently flowered by the Rev. J. Clowes, of Manchester, who received it from Mr. Linden. Fig. in *Bot. Mag.* t. 4193.

LYCASTE GIGANTEA, *Lindley*. (Large-flowered Lycaste.)—This is a remarkable rather than a handsome plant. Unlike most of the *Lycastes*, which flower beneath the leaves, on comparatively short stalks, the flowers of this are elevated at least two feet high; and they are moreover among the largest produced by Orchidaceous plants, the expansion of the petals being not less than six inches, standing out in the form of a triangle: in colour they are greenish yellow, suffused with brown, and the lip is of a reddish brown. It is found in La Guayra, and at Quebrada de las Juntas, in Guayaquil: in Belgium it has been called

Maxillaria Heynderycxii. Fig. in *Bot. Reg.* 1845, t. 34.

LYCASTE MACROBULBON, *Hooker*. (Large-bulbed Lycaste.)—This species, which is named from the comparatively large dimensions of its pseudo-bulbs, is in the way of *L. aromatica* and *L. cruenta*; it bears large scentless flowers, of which the sepals are pale and greenish, the petals and lip deeper coloured, the latter spotted with small reddish dots; the leaves, as well as the pseudo-bulbs, are large. It was sent by Mr. Purdie, from Sierra Nevada, Santa Martha, to the Botanic Garden at Kew. Fig. in *Bot. Mag.* t. 4228.

MAXILLARIA LYONII, *Lindley*. (Lyon's Maxillaria.)—A small species, with narrow grassy leaves, and dull purplish brown flowers, very slightly bordered with a yellow tint: imported from Mexico.

MAXILLARIA SETIGERA, *Lindley*. (Bristle-pointed Maxillaria.)—A pseudo-bulbous species, with leaves said to be like *Oncidium ampliatum*; the flowers which grow singly are pale yellow, slightly tinged with pink on the outside; the petals, which are exactly linear, terminate suddenly at the point in a fine bristle, whence the name; the lip is principally white, the centre of the upper part is yellow, and the sides of the lower portion streaked with crimson. It is from La Guayra.

MORMODES CARTONI, *Hooker*. (Carton's Mormodes.)—This is a handsome Mormodes, with subcylindrical, articulated pseudo-bulbs, almost a span long, sheathed at the joints by the membranous bases of the old leaves: the leaves are long and narrow; the erect flower-scapes proceed from the articulations of the pseudo-bulbs, and bear a rather dense oblong spike of gay flowers, the sepals and petals oblong lanceolate, yellow, with numerous longitudinal red streaks, the lip pale yellow, with a few interrupted red streaks. It was first flowered at Syon Gardens, in November, 1845, by Mr. Carton. Sent by Mr. Purdie, from the interior of Santa Martha, at the foot of Sierra Nevada. Figured in *Bot. Mag.* t. 4214. It is quite new.

ODONTOGLOSSUM CERVANTESII, *Lindley*. (Cervantes' Tooth-tongue.)—This is one of the smaller and more beautiful of the stove Orchids, which is adapted to general cultivation. It is a dwarf-growing plant, with small oval pseudo-bulbs, each producing a single oblong leaf, from the top: the flowers are in a short curved scape, generally four or five on a stem; they are of a delicate pink or flesh-colour, tinted with yellow in the centre, and there marked with several broken concentric crimson bands; they are also scented, smelling like bitter almonds. It has been introduced from Oaxaca, and is allied to *O. membranaceum*, which differs but little in its general appear-

ance. It should be grown in pots in the elevated way. Figured in *Bot. Reg.* 1845, t. 36.

ODONTOGLOSSUM MEMBRANEUM, *Lindley*. (Membranaceous sheathed *Odontoglossum*.)—This is a beautiful little pseudo-bulbous Orchid. The blossoms are white, in the way of *O. Cervantesii*, of large size, and delicately banded in a concentric manner, with rose-coloured streaks or bands. *O. Cervantesii* is much like this, but in that species the bands do not cross the base of the lip. Fig. in *Bot. Reg.* 1846, t. 34.

ONCIDIUM GALLOPAVINUM, *Morren*, is the same as *O. spilopterum*; it is a pseudo-bulbous species, from Mexico, with a spike of from seven to ten flowers of considerable beauty, the sepals and petals of which are brownish green, stained with crimson, and the lip is large and yellow. Fig. in *Bot. Reg.* 1845, t. 40.

ONCIDIUM INCURVUM, *Barher*. (Curved Oncid.)—A very pretty pseudo-bulbous species, with a long, erect, branched panicle, of rather small white flowers, the sepals and petals banded with red, and the base of the lip of the same colour. It is a free growing, but exceedingly rare and pretty species. Fig. in *Bot. Reg.* 1845, t. 64.

ONCIDIUM LACERUM, *Lindley*. (Cut-lipped Oncid.)—This belongs to the round or chive-leaved section of Oncids, and is one of the handsomest of that group. It bears a close many-flowered panicle of gay yellow flowers, spotted, except on the lip, which is clear yellow. It is found in Panama, whence Messrs. Loddiges received it, and bloomed it in 1844. Fig. in *Bot. Reg.* 1846, t. 27.

ONCIDIUM PHYMATOCHILUM, *Lindley*? (Warted-lipped Oncid.)—At the exhibition of the Horticultural Society in May, 1846, a handsome specimen of this new and rare species was shown by the Rev. J. Clowes, of Broughton Hall. It is not what may be called a showy plant, but a very singular looking one; in fact, its long narrow sepals and petals give it more the appearance of a Brassia than an Oncid. The flowers are produced in large spreading panicles, the sepals and petals are of a pale greenish colour, spotted with brown, and the lip is white, spotted at the base with yellow. According to the catalogue of Messrs. Loddiges, the plant was received from Brazil in 1843.

ORNITHIDIUM MINIATUM, *Lindley*. (Vermilion painted *Ornithidium*.)—A caulescent species, with bulb-like stems, and oblong spreading leaves: the flowers are of a rich crimson vermilion, with a yellow lip, blotched with crimson. It was received from Colombia by Messrs. Rollison. It has quite the habit of *O. coccineum*, but is much handsomer.

PERISTERIA HUMBOLDTI, *var. fulva*, *Hooker*. (Tawny flowered variety of Humboldt's Dove-flower.)—This is, perhaps, one of the most gay and interesting of the race of Orchidaceæ. It has oblong pseudo-bulbs, and a long, drooping, many-flowered raceme, produced from the base of the pseudo-bulbs; the flowers are numerous produced on this raceme; they are of a triangular figure, tawny yellow, and dashed all over with small purple brown spots. It is the *Anguloa superba* of Humboldt, and is a native of Venezuela. Figured in *Bot. Mag.* t. 4156.

PLEUROTHALLIS CRENATA, *Lindley*. (Crenelled *Plenrothallis*)—A stove epiphyte, of little beauty. It has oblong obtuse leaves, and loose racemes of dull green flowers, closely spotted with dull dark purple. It was obtained from Mexico by Messrs. Loddiges.

POLYSTACHYA BRACTEOSA, *Lindley*. (Bracteated *Polystachya*.)—A small plant from Sierra Leone. The pseudo-bulbs are small, suborbicular, and from the top arises the petiole of the oblong ovate leaf, and from the base of the leaf issues the drooping raceme of numerous small orange coloured flowers. None of the parts are large enough to produce much show.

PORPAX RETICULATA, *Lindley*. (Net-veined *Porpax*.)—A diminutive and curious Orchid, with a few button-like pseudo-bulbs, held together by a slender rhizome, little oblong leaves, and small dull red flowers, about three-quarters of an inch long: these flowers are solitary. It was received from the East Indies by Messrs. Loddiges. It is, of course, not showy, but interesting, from its very diminutive proportions.

SACCOLABIUM SP. — Messrs. Veitch, of Exeter, have imported from Java what is regarded as a new species of this fine genus; it bears compact drooping racemes of white and purple flowers, and has rather long strap-shaped præmorse leaves.

SARCHOCHILUS CALCEOLUS, *Lindley*. (Slippered *Fleshlip*.)—A singular, but not very showy stove epiphyte, from Manilla, whence Messrs. Loddiges received it. It has a lengthened stem, throwing out aerial roots at intervals, and furnished with oblong fleshy leaves; from just above the axils of which the flowers are produced on short two-flowered peduncles: they are white in every part except the lip, which is tinted with yellow and orange; in form, the lip remarkably resembles a slipper. The plant is quite novel. Fig. in *Bot. Reg.* 1846, t. 19.

SCHOMBURGKIA TIBICINIS, *var. grandiflora*, *Lindley*. (Large-flowered variety of Trumpet *Schomburgkia*.)—The *Schomburgkias* are very tall-growing Orchidaceous plants, of some rarity, and certainly of a magnificent

character, though less beautiful than many others of the same tribe. The pseudo-bulbs of this variety are from a foot to fifteen inches, from the top of which issue three or four oblong leaves of a leathery texture, and from the midst of these the flower-stem rises to the height of five feet, bearing a few flowers at the top: the flowers are two inches across, with sepals and petals of a cinnamon brown, and purplish on the outside; the middle lobe of the lip is yellow, bordered with white, the other parts yellowish, with white and purple veinings. The name *tibicinis* is given to this species, from the hollow pseudo-bulbs being used as trumpets by the Indian children of Honduras. Fig. in *Bot. Reg.* 1845, t. 30.

SCHOMBURGKIA UNDULATA, *Lindley*. (Wavy Schomburgkia.)—A pseudo-bulbous species, with a long flower-stem, bearing several flowers close together at the top. In the wild specimens, there are as many as twenty flowers in a cluster. These sepals and petals are brownish purple, and much curled, or waved, on the margins: hence the specific name. The lip is rose-coloured. It is a most beautiful plant. Introduced from New Grenada, growing on the rocks near Pandi, at the height of 2,400 feet above the sea. Figured in *Bot. Reg.* 1845, t. 53.

SCHOMBURGKIA ROSEA, *Lindley*. (Rose-coloured Schomburgkia.) This plant is believed to be alive in the country, but has not yet flowered. It is a most magnificent species, with deep red petals, and bracts peduncles and lip, all of a light rose colour. It is found on rocks, 5,000 feet above the sea, between the villages of S. Antonia and S. Miguel, on the northern slope of the Sierra Nevada.

STANHOPEA INODORA, *Loddiges*. (Scentless Stanhopea.)—This is a handsome species, with large pale-coloured flowers, of the form of those of *S. graveolens*, the colour of *S. saccata*, and the habit of flowering of *S. insignis*. The flowers are pale lemon-coloured, with an orange blotch at the base of the lip, and a greenish column: they are scentless. Messrs. Loddiges imported it from Mexico. Fig. in *Bot. Reg.* 1845, t. 65. It is new.

STANHOPEA BUCEPHALUS, *Lindley*. (Bull-horned Stanhopea.)—This might be mistaken for a variety of *S. oculata*, but the shortness of its ovary offers a mark of distinction to the botanist; and this character has the effect of altering the appearance of the plant by rendering the spike of bloom narrow, whereas in *S. oculata* it is broad and spreading. It has the habit and character of the other species of *Stanhopea*, namely, large pseudo-bulbs, broad leaves, and drooping racemes of large flowers, which are bright golden-coloured, potted with reddish brown, and deliciously scented. The stem also is spotted. It is a

native of the woods of Paccha, a small village in the ascent from Guayaquil to Loxa, at an elevation of 6,000 feet above the level of the sea, where it was found by Mr. Hartweg, and by him introduced to the garden of the Horticultural Society. Fig. in *Bot. Reg.* 1845, t. 24. A new species.

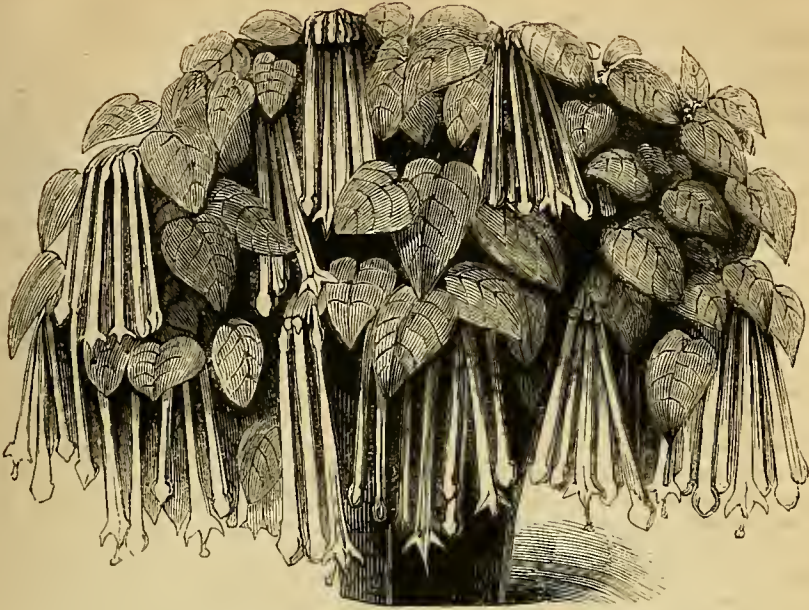
ACHIMENES PATENS.

THE name of *Achimenes* is so much associated with gay flowers, that we naturally look for an interesting subject, when we hear of the introduction of a new species. *Ach. argyrostigma* is the only one among those in cultivation which does not bear this character; and even in it the spotted leaves and neat flowers, though not constituting a showy plant, are yet desirable and pretty. The other species—the old *coccinea*, with scarlet flowers; *longiflora*, with blue; *grandiflora* and *rosea*, with rose-coloured; *pedunculata* and *hirsuta*, with crimson; and *pieta*, with orange and red spotted flowers—are in these days well known as being very showy subjects, or at least capable of being made so.

Achimenes patens (the open or flat-flowered), does not differ in general characters from the other species in cultivation, except in the colour of the flowers, which are of a beautiful rich rosy purple colour; they are intermediate in size between those of *longiflora* and *rosea*—at least such is the present aspect of the plant; but it has been but very recently received in this country. Mr. Hartweg, the collector of the Horticultural Society, on his outward journey to California, obtained dry roots of this species, of which, it appears, he knew the existence and locality. Some of these roots were sent by post, and were received by the Horticultural Society but a few weeks since, and consequently the plants have not had time to become very strong. As they are now blooming, the flowers are about an inch, or an inch and a half, across, and, as before stated, of a remarkably rich purple rose colour. Apparently two varieties were received, of which one with the smaller flowers is of the deepest and richest colouring; but perhaps this may not ultimately prove to be so.

We were much gratified by an opportunity of inspecting this plant at the last meeting of the Horticultural Society, where some specimens just arrived at a blooming condition were exhibited. We have not had an opportunity of comparing its structure with that of the other species, but the tube is considerably lengthened upwards, in the form of a spur.

The native country of this plant is Mexico, where it is found between Zitaquara and the Hacienda de Laureles.



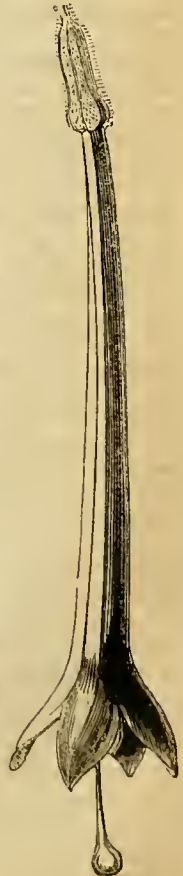
FUCHSIA MACRANTHA.

(Hooker.)

THE LARGE-FLOWERED FUCHSIA.

THE Fuchsia is a very popular family of plants, and though not a very extensive one, as compared with others we are acquainted with, yet it comprehends very considerable variety, both in the flowers, and in the habit of growth of the species which it contains. We are now looking at the genus, botanically—as a family group of distinct individual forms, called species. Florists have intermixed these species, until they have given rise to an almost endless number of varieties, some of which are indeed very distinct and very handsome, but the great majority are considered by many persons to be very much inferior in beauty to the original kinds from which they were produced. The great and prevailing faults of these varieties are their sameness and tameness of colouring, and their coarseness of texture, which points—and they are blemishes—are much more observable in very many of the hybrids than in their parents.

The wild species are variously distributed, but with hardly an exception are found in the New World. Some of them are small spreading shrubs, with small flowers, of which class one now much neglected, called *microphylla*, is a floral gem. Others are of larger size, with much larger flowers hanging on long stalks like “ear-drops,” from the base of every leaf, and furnishing the old-fashioned idea of a Fuchsia. Subsequently to the introduction of these, some kinds, with tube-shaped flowers several inches long, and hanging in dense bunches from the end of the branches, have made their appearance in our gardens; and others, again, have been imported, which, we are told by travellers, cling to the forest vegetation of South America, something in the way that the ivy embraces our native sylvan forms. Many species known to botanists, and which are regarded by them as the most remarkable native forms, remain to be introduced. Florists have



attempted to bring the *Fuchsia* under cognizance of their rigid rules, but with such a variety of original forms, it is no wonder that they have been less successful in moulding this flower to a "standard," than most others to which their attention has been directed.

Fuchsia macrantha, of which a representation accompanies this notice, is the most recent introduction, having been received from South America, by Messrs. Veitch and Son, of Exeter, from their collector, Mr. W. Lobb, and bloomed for the first time in this country during the spring of the present year (1846). We had an opportunity of witnessing blooming plants sent in April to the meeting of the Horticultural Society of London, and are therefore in a position to state, from personal inspection, that it is perfectly distinct from any of the kinds already in cultivation; we cannot indeed consider it to be the most beautiful of the kinds we are acquainted with, but being a handsome plant, it will no doubt, on account of its distinctness, meet with a considerable share of public favour.

The greatest peculiarity for which this plant is remarkable, is the absence of petals in the flowers, so that, in fact, the flowers consist simply of long tubes, divided at the lower extremity into four obtusely angular segments, beyond which the style, but not the stamens are protruded. At present, in a cultivated state, it assumes the form of a low, somewhat straggling shrub, with spreading branches; but Sir W. Hooker states, that in Peru, where it was originally observed in lofty mountains at Andimarca, it was found climbing on the trees, so that we may expect the straggling habit which has been manifested to become more fully confirmed and developed, as our acquaintance with it increases. It has however not yet been seen to exceed about two feet in height, and in this state the flowers quite conceal the stems, from the number in which they are produced; indeed so freely does it produce its flowers, that small plants, scarcely more than six inches high, are found to flower freely.

The whole plant is more or less clothed with coarse pubescence; it has large leaves, of an acutely ovate figure, and purplish beneath, and pendulous apetalous (without petals) flowers, the calyx of which is very long—often six inches—cylindrical, a little widening upwards, and divided into four ovate segments; these flowers are each produced on a separate stalk, sometimes solitary, sometimes aggregated, also "among the terminal leaves, which are often so small as to give the appearance of terminal corymbs; at other times, the flowering branches are crowned with a tuft of leaves." The colour of the flowers is a rosy-red, paler towards the base of the tube, and also on the segments, which are slightly tipped

with green. If, observes Sir W. Hooker, this be not the most brilliantly coloured of *Fuchsias*, it certainly can boast the largest flowers, and it bears them more copiously than any other species.

Mr. W. Lobb, the collector to Messrs. Veitch, detected this plant growing in woods near Chasula, in Colombia, at an elevation of 5,000 feet above the sea; and it is through this source that it has been introduced to this country in a living state. Dried specimens have been for some time in Sir W. Hooker's herbarium.

In regard to cultivation, it will, doubtless, prove a hardy green-house species, the elevation of its natural habitat (5,000 feet) being sufficient to warrant this conclusion: there is indeed every reason to believe that it would succeed out of doors during the summer months. Like the other species of similar habit, the present seems to be most fitted for a conservatory, where it might be either planted out in the border, or grown into a large specimen in a pot. From the manner in which the blossoms of the plant are produced, it will be obvious that it is well adapted for growing into the form of a standard, from which the long dependent flowers would hang with good effect. Whatever beauty there may be in plants of small size, there can be no doubt that those which are grown into larger bushes will proportionately increase in beauty; such is the case with *F. fulgens*, and *F. corymbiflora*, the two kinds common in our gardens, to which in general characters this bears the greatest resemblance. It seems to bloom early in the summer.

It is hardly necessary to mention that a coarse, rich loamy soil is most suited for *Fuchsias*; and that if full exposure to light is secured to them, they will thrive best when treated on something like the large-shift system.

Fuchsias belong to the natural order *Onagraceæ*, the same order which includes the *Enothera*, and other garden flowers. In the Linnæan arrangement, they belong to *Octandria monogynia*.

ANTARCTIC GENTIANAS.

In the *Flora Antarctica*, are representations of two species of *Gentiana*, which would prove acquisitions among our hardy plants. These are named *Gentiana concinna* (neat), and *G. cerina* (waxy.) The former is a very dwarf annual plant, forming a little tuft two or three inches high, with short branches thickly set with elongated spatulate leaves, and the ends of the shoots terminated by a leafy panicle of small white flowers; but which must give the tuft a very pretty appearance. It occurs in bleak and exposed places on the hills in Campbell's Island, and in Lord Auckland's group.

It flowers there in November and December. *G. cerina* is perennial, with a branching prostrate stem, and broad obtusely spatulate leaves. The flowers are white, and grow in leafy panicles at the ends of the shoots. The leaves and flowers of this beautiful plant have a peculiarly pellucid and waxy appearance. It is found near the sea, on rocky islets in Rendezvous harbour, Lord Auckland's group. Dr. Hooker remarks, in connexion with these plants, "that although the species of Gentians are seldom white-flowered, yet these are decidedly so, with red, or red-purple, at the base of the segments of the corolla, and veins of the same colour. The pure blue of the European species," continues Dr. Hooker, "is unknown amongst those of these regions, or of the higher latitudes of South America. Indeed, I think that few genera display so full a series of colours in the flowers as this does; red, blue, yellow, and white, are all exhibited in it, with many of the intermediate compound tints. Yellow and white are rare in the regions of the Gentians; blue almost invariably present; the red species are nearly confined to the Andes of South America, and New Zealand." Dr. Jameson remarks, that of sixteen species known to him, "one-half are red, four purple, two blue, one yellow, and one white."



PINGUICULA ORCHIDIROIDES.

(Alphonse de CandoUe.)

THE ORCHIS-LIKE BUTTERWORT.

This plant, as will be seen from the engraving, is one of very interesting appearance, a good deal resembling our native butterworts in general appearance, but far more ornamental.

It is a perennial plant, having two kinds of leaves, which grow in little tufts, in the way of an Auricula. Those nearest the ground (that is, the outer ones) are small, of an acutely ovate figure, and are closely imbricated (that is, lying one over the other, like the tiles of a roof), resembling little scales. The others, which are produced from within the circle of these scale-like bodies, are fewer, much larger, and are obovate-spathulate, a little concave; they are of a pale glaucous green colour. From among the leaves rise the flower-stems, or scapes, as they are termed when they rise at once from the ground, and bear the flowers at the summit. They are from four to five inches high, and each bears one handsome purple flower, which consists of five nearly equal spreading lobes, with a long curved cylindrical spur. The two upper lobes of the corolla are situated close together, forming the upper lip of the flower, the three lower ones forming the lower lip. The flowers are purple, with a whitish throat, marked with a few reddish-purple lines.

Plants of this very pretty little *Pinguicula* were sent by Mr. Repper from the Real del Monte, in Mexico, to the Botanic Garden of Kew, where they flowered during the latter part of the winter of 1845-6. They were then kept in the cool stoves, and were growing in pots plunged in sphagnum and other mosses; and, treated in this manner, they were found to flourish as well as if they had been growing on their native mountains in Mexico.

The *Pinguiculas* have a singular organization, and serve very forcibly to exhibit the analogy existing between buds and bulbs. During the growing season, they appear like ordinary herbaceous plants, the leaves forming a little tuft close to the ground. Towards autumn, the leaves gradually decay, and small, round, leafy buds, about half an inch in diameter, called hybernaculæ, are all that remain, until the growing season returns, when new leaves and flowers spring forth. They belong to the natural order Lentibulariæ.

They are all bog plants, and should, therefore, be potted in soil of which chopped moss forms a principal ingredient; the remainder may consist of small lumps of peat soil. The pots, too, should stand in feeders of water. The native ones grow well if kept in frames; and *P. orchidioides* would certainly succeed in a greenhouse, if covered by a hand-glass, so as to retain a close atmosphere about it.

THE JERUSALEM ARTICHOKE.

THE Jerusalem Artichoke (*Helianthus tuberosus*) is a native of South America. It is

a tall, coarse plant, growing from ten to fifteen feet high, according to soil and season; seldom flowering except in warm years, or on poor land. The flowers are similar to those of the common sunflower (*Helianthus annuus*), except in size, being much smaller. The stem seldom branches, rising straight and wandlike, clothed at short distances with rough, broad, rather heart-shaped leaves, which are coarsely toothed on their edges.

This plant seems to delight in a free, sandy soil, manure hardly being required, and certainly in some cases being injurious. In rich old garden ground, and in some others of close texture, the roots acquire a disagreeable mouldy taste, completely unfitting them for the table; but in sandy or chalky ground, this is seldom or never the case. In many gardens, it is grown in any out-of-the-way corner, where it is seldom disturbed, except to take up whatever roots may be wanted, which is generally done after much the same way as a parcel of pigs would accomplish the same operation. Of course, this ought to be avoided, as it can neither produce a proper crop, nor ought any part of a garden to be left in such a state from year to year. Besides, this plant may be made very useful in forming screens, either for shelter or shade, during the summer and autumn, for any crops which may require either the one or the other. Choose, then, the situation, and having dug and left the soil as light as possible, plant the sets, either moderate sized whole tubers, or, if preferred, sets with one or more eyes, in similar fashion to those of potatoes. If a piece of ground is chosen to be entirely occupied with them, they should be planted in rows from two to three feet apart, and about a foot from set to set in the rows. But where there is room, or necessity for shade, two rows together will be found to yield a finer crop than if the plants are huddled together. It has been recommended to nip out the tops of the shoots when they are about three feet high; and this would seem to prove beneficial, as the plant meeting with a temporary check in the development of more young leaves, those already formed would begin to react on the roots, and induce them to throw out their subterranean stems, the thickening of which at their points forms the tuber for which the plant is cultivated. In practice, however, little or no benefit arises from topping them. As the season advances, the rows should be well moulded up, and the ground left as light as possible. If the weather prove very dry, good soakings of water will be found very beneficial, although it must be a very dry season in this country which did not produce an average crop.

As autumn approaches, and the stems are blackened with frost, which is generally the

case with the first that happens, the tubers should be carefully dug up with a fork, and the ground thoroughly cleared of all remains of the crop. Every particle of root should be carefully removed, as otherwise they become a troublesome weed in the next season. The roots should be sorted, rejecting the small and cut ones, and storing the largest away in sand, in the same way as carrots and other similar roots. Pigs and poultry are very fond of this tuber, and therefore the refuse need not be lost; in fact, the first are said to do remarkably well on them, although they are known to possess but slight farinaceous properties.

This root is dressed in various ways, and is held in high estimation by many; but should a person, on first trying it, happen to taste the mouldy flavour before spoken of, he will hardly care to taste it again. It, however, forms a good variety in winter dishes, and is particularly valuable in severe winters, when vegetables are scarce.



ECHINOCACTUS OXYGONUS,

(Link and Otto.)

THE SHARP-ANGLED HEDGE-HOG CACTUS.

WE may at some future time notice the different groups of Cacti, and endeavour to explain in what their differences consist. In the mean time the annexed figure gives a good idea of that group to which the name of Echinocactus has been applied. It is one of the class distinguished by the appellations of "globe" Cacti and "dwarf" Cacti, in distinction from such plants as the more gaudy genera, *Cereus* and *Epiphyllum*, to which is commonly applied the distinctive name of "tall" Cacti.

These dwarf or globe Cactuses are exceed-

ingly well adapted for growing in Wardian cases or window green-houses, and, from their small size and great singularity, recommend themselves particularly to those amateurs who have not convenience for plants of greater stature. In short, in a small window green-house, a few feet square, a very large number of these plants might be grown. They would all, and at all times, be exceedingly interesting, while some one or other among them would be almost constantly in flower; some, as in the present subject, being really plants of great beauty.

This plant is of a sub-globose figure, generally a little longer than broad, depressed at the summit, and divided on the surface into several—from thirteen to fifteen—deep furrows, and as many prominent, though somewhat compressed, ridges, which are what is called sinuate-lobate along the edges; that is, divided into regular rounded elevations. At the upper edge of each of these rounded lobes the little clusters of spines are situated; these are called areolæ, and consist of a small spherical woolly body, with from six to ten rather short straightish spreading nearly equal spines. From the areoles of some of the lobes near the top of the plant the flowers are produced; they are a span or more long—often longer than the plant itself—with a very long trumpet-shaped tube, of a greenish colour, with numerous red brown scales, which, as they approach the upper end of the tube, gradually become larger and longer, and pass into, first, the deep rose-coloured calycine segments, and again into the oblong, apiculate, pale rose-coloured spreading petals. In the centre of the tube appear the numerous straw-coloured stamens, and among them the whitish branching stigma. The form of the flower will be readily understood from the illustration.

The plant is said to be a free flowering one, producing its flowers in May, often having several expanded at one time: their duration is about two days.

Very little is known of the history of this tribe of plants, and the present seems to be one of those of which the information is but scanty. It is, however, supposed to be a native of South Brazil, and is cultivated, along with a very large collection of others, in the national botanic garden of Kew.

In the natural arrangement, *Echinocactus* belongs to the order *Cactaceæ*, and in the Linnean to *Icosandria monogynia*.

HORTICULTURAL SOCIETY.

SECOND EXHIBITION FOR 1846.

THE second of the grand floral fêtes of the Horticultural Society took place in the garden at Chiswick on June 13th. June flower shows

are usually attractive scenes, and on this occasion thirteen thousand persons enjoyed the sight, beneath an Italian sky. As at page 262, we shall merely notice some of the more remarkable of the plants which were produced.

Stove Plants.—The *Clerodendrons* among these, were quite the feature of the exhibition, supplying the gorgeousness of *Azaleas* at an earlier period. There were many excellent specimens present. The most remarkable was *C. paniculatum* from Mr. Ayres, of Brooklands, which was seven feet high, and had a monstrous, flattened, three-forked panicle of orange-scarlet flowers, not less than a foot and a half long; the leaves of this plant are large, and deeply lobed. Of *C. fallax*, which has deep scarlet flowers and large heart-shaped leaves, Mr. Robertson, of Ealing, had one five feet high, with nine panicles of bloom, and others with seven; and other plants from Mr. Stanley, of Sidcup, had five heads of flowers; Mr. Barnes, of Bromley, had one with two principal stems, and many branches; Mr. Epps, of Maidstone, had a very handsome smaller plant, three feet high, with three stems; Mr. Ayres had one of a variety called *superbum*, which was five feet high, with four panicles of bloom. Then of *C. squamatum*, Mr. Hunt, of Bromley, had one four feet high with six panicles; and Mr. Barnes had one of this kind five feet high, with seven panicles of bloom; this kind has orange-coloured flowers. The *Ixoras* too are magnificent shrubby plants, with ample somewhat oval leaves, and large round close heads of scarlet flowers; at least *I. coccinea*, the species chiefly shown, has flowers of this colour. Mr. Fraser, of Lea Bridge, and Mr. Hunt, each had branchy plants of this kind five feet high, and well foliaged, and with very many heads of bloom; Mr. Malyon, of Blackheath, had a smaller one four feet high, and three in diameter, with seven fine heads of bloom; Mr. Epps, and Mr. Green, of Cheam, had plants about two feet high, the former with ten heads of flower, and the latter well bloomed. Then there was *Poivreia coccinea* (the old *Combretum*, badly named *purpureum*), a neat plant five feet high, covered over with feathery spikes of crimson-scarlet blossoms; this was from Mr. Pawley, of Bromley. *Rondeletia speciosa*, a handsome shrub, with roughish leaves, and little heads of orange-scarlet flowers, was there from Mr. Barnes and Mr. Robertson. Another more easily grown plant, also with rough leaves, and orange-scarlet heads of flowers, but a good deal like those of *Verbenas*, was the *Lantana erocea*, of which a bushy specimen four feet across, was sent by Mr. Catleugh, of Chelsea. And still again of scarlet flowers, Messrs. Veitch, of Exeter, sent their brilliant coloured *Siphocampylos coccineus*, larger than the plant men-

tioned at page 262, and equally well flowered. Of white flowers, there was the beautifully scented *Gardenia florida*, (the Cape jasmine,) a large bush five feet high, from Mr. Green. Then there was the no less agreeably perfumed *Stephanotis floribunda*, perhaps the best evergreen white flowered stove creeper in cultivation: several persons sent plants of this, but we can only mention two from Mr. Robertson, on cylinder trellises, about eight feet high and four in diameter; another six feet by three, from Mr. Carson, of Cheam; and a smaller one from Mr. Catleugh. There was also *Pavetta Caffra*, an evergreen shrub, with ovalish leaves, and heads of white flowers very neatly grown and well bloomed about two feet high, from Mr. Fraser; a plant larger than this of *Tabernæ montana coronaria*, from Mr. Robertson; and of *Cyrtoceras reflexum*, a plant with fine evergreen foliage, and drooping bunches of small starry whitish flowers, several plants from different persons. There were some plants of *Allamanda cathartica*, a fine stove climber with large yellow flowers; one from Mr. Carson was on a cylinder trellis, seven feet by three; and another from Mr. Ayres six feet by three. *Euthales macrophylla* is a very much branching twiggy plant with yellow flowers, with a dark-coloured blotch; this was from Mr. Carson. Mr. Green had a very large fully bloomed Cactus—*Epiphyllum speciosum*; this was six feet high, and three feet across. Mr. Bruce, of Tooting, had a worked plant of *Cereus flagelliformis*, a standard, with its long trailing stems hanging down towards the pot. Mr. Bruce also had a plant of the drooping stemmed *Russelia juncea*, with tubular scarlet flowers. From Mr. Fraser was a very neat plant two feet high, well flowered, of *Franciscea acuminata* (also known as *F. Pohliana*); this is a beautiful plant, with downy oblong leaves, and bunches of large flat purple flowers.

Green-house Plants.—These were perhaps less showy than the class just named. The *Phænomas* and *Aphelaxes* were numerous and well bloomed; one small young plant of the former from Mr. Fraser was beautifully grown. The *Pimeleas* were very conspicuous. Many large plants of *P. decussata*, an old kind with small heads of rosy-pink flowers, were present. Mr. Hunt had one five feet high and as much in diameter; Mr. Pope, of Wanstead, had one two feet by three; and Mr. Robertson had some large specimens. Of *P. hispida*, a very handsome kind with large pale pink flowers, Mr. Hunt had a dwarf plant, two feet across. Mr. Hunt also had a *P. spectabilis* two feet and a half by three. There were some good *Leschenaultias*. Mr. Stanley had a plant of *L. formosa*, two feet by two; Mr. Pamplin, of Walthamstow, had one of about the same

size; Mr. Ayres had one six inches high, and two feet across. Two beautiful plants of *Crowea saligna* came from Mr. Ayres and Mr. Fraser; these were free grown plants six feet high, and full of large pink starry flowers. Mr. Fraser had a cylinder shaped plant of *Sollya linearis*, six feet by three; this is an excellent green-house climber, with willow-shaped leaves and deep blue flowers. Of other useful blue flowers which may be had at this season, the arborescent *Statice*s are worth notice. *S. arborea* was there from Mr. Fraser, with five panicles of bloom above its ample leaves; and another plant from Mr. Robertson was rather better flowered. *S. macrophylla* is a similar and superior kind, of which Mr. Robertson had a neat plant. Messrs. Veitch sent *Mirbelia ilicifolia*, a bushy plant, with small prickly holly-like leaves, and purple flowers. Of purple-flowered *Polygalas*—whose blooms somewhat resemble a bird with expanded wings—there was *P. oppositifolia*, three feet by three, from Mr. Ayres; *P. acuminata*, two feet by three, from Mr. May; and several specimens of *P. cordifolia*. The *Coleonemas* are graceful growing shrubs with slender foliage, and pink starry flowers. *C. rubrum*, five feet by five, came from Mr. Pamplin, and one of similar size from Mr. Fraser; and *C. pulchrum*, six feet by five, came from Mr. Robertson. Mr. Robertson also had *Eriostemon buxifolius*, a fine shrub, with box-like leaves, and delicate pink starry flowers; also *Boronia denticulata*, a branchy plant three feet by three. A pretty little *Epacris*-like plant with heads of white flowers called *Dracophyllum gracile*, was sent by Mr. May, of Woodford. The best *Azalea* at the exhibition was *A. Danielsiana*, from Mr. Robertson, a bushy plant about three feet high, and full of bloom; the leaves of this kind are small, and the flowers large, of a lively light red colour. We noticed some of the rare Cape species of *Pelargonium*—a very pretty family, deserving to share the attention excited by the fancy kinds. One of these was *P. holosericeum*, with oblong silky leaves, and crimson and blush coloured flowers; another was the better known, but rare, *P. (or Phymatanthus) tricolor*, with narrow jagged leaves, and tricoloured flowers—scarlet, black, and white; another is *P. elatum*, in the way of the last, but larger, and with less distinct colours; *P. quinquevulnera* has broad, very deeply jagged (multifid) leaves, and flesh-coloured flowers, each petal with a dark purple spot; *P. bicolor* is something in the same way; *P. ardens* is less shrubby in habit, with brilliant crimson flowers, spotted with maroon.

Heaths.—The most remarkable of this transcendently beautiful tribe of plants were the following:—*Erica metulæflora bicolor*, four feet by four, from Messrs. Fairbairn of

Clapham; this is a very lovely kind, the flowers being large, tubular, rose-coloured tipped with white; Messrs. Rollison of Tooting and Mr. Robertson, each had smaller plants. *E. Massonii*—red and green—from Mr. May of Beckenham, three feet by three; also a splendid plant, two feet and a half by three from Mr. Hunt; and some smaller ones of the same kind from Mr. Jackson, of Kingston. Mr. Robertson had a splendidly grown *E. gemmifera* in the way of *Massoni*, but smaller; this plant was two feet and half high, by four feet across. Mr. Hunt had *E. retorta* major, three feet by three, in perfect health. Of *E. Cavendishiana*, the best of the yellow tube-flowered sorts, Mr. Robertson had one two feet and a half by three feet; and Messrs. Fairbairn had one two feet by two. Messrs. Rollison had a very good small *E. Coventryana*; also of *E. gnaphalioides*, a rare and peculiar species with small silky looking flowers; the latter was also sent by Messrs. Veitch of Exeter. Mr. Scott, of Leigh Park, Havant, sent a fine *E. ventricosa*, five feet by four, covered with deep pink flowers. Of the varieties of *E. tricolor*—one of the light coloured rare tubular kinds—Mr. Hunt had a good *E. tricolor elegans* four feet by four; and Mr. Epps had *E. tricolor rubra*, one foot and a half by two and a half. *E. odorata rosea*, a bell-flowered white variety, was sent, in fine state, by Mr. May and Mr. Hunt; the former was three feet by three; the latter, two feet by two. Of the class with large tubular flowers much swollen at the base, and contracted at the tip, there was a good *E. ampullacea vittata*, four feet by three, from Mr. May; and several persons sent varieties of *E. inflata*, and *jasminiflora*. Of newer varieties in this way, all with palish coloured bloom, were *E. Dunbariana* from Messrs. Fairbairn, *E. Whartoniana*, and *E. Kingscotiana*, from Messrs. Rollison. Messrs. Veitch sent a small plant of the beautiful and rare *E. obbata*.

Orchids.—These singular plants were numerous and very fine. The most beautiful plant was a *Saccolabium guttatum*, from Mr. Rae, of Reading; this was growing in a large wire basket, and had twenty-one long densely covered drooping racemes of beautiful spotted flowers, of which the predominant colour was a delicate pale purplish rose. Mr. Plant, of Stratford, had a smaller specimen of the same with five racemes. The next most remarkable specimen was an *Aërides odoratum* major, from Mr. Mylam, of Wandsworth, which had about forty drooping racemes, of white fragrant flowers blotched with rosy purple; another plant of the same, from Mr. Mylam, had twenty-seven racemes. Mr. Rae had one with thirty-eight racemes; and Mr.

Carson produced one with eleven racemes. There were many fine plants of *Cattleya Mossiæ*, with large specious flowers. *Sobralia macrantha*, a very rare species, with large deep rose-coloured flowers, was sent by Mr. Mylam; as also was *Anguloa Clowesii*, a plant with three large eup-shaped clear yellow flowers. Mr. Rae sent *Anguloa uniflora*, which has whitish flowers. There were a few *Stanhopeas*. Messrs. Rollison sent *S. oculata*, and *S. saecata*; and Mr. Robertson and Mr. Rae also sent *S. oculata*. From Mr. Mylam was *Vanda teres*, with three bunches of showy bloom, borne on plants with terete (quill-like) leaves. *Burlingtonia venusta*, a small species with dense drooping racemes of white flowers marked with yellow, was sent by Mr. Mylam and Mr. Don, of Stockwell; the former's plant having twelve, the latter's five racemes of bloom. Mr. Don had a good *Brassia Lanceana*; as had Mr. Eyles, of Roehampton. Mr. Robertson sent a large *Dendrobium eupreum*, *Barkeria spectabilis*, a pretty and rare species, and the gay yolk-of-egg-coloured *Epidendrum vitellinum*, with three stems of bloom. Mr. Mylam sent *Cyrtophilum stellatum*, with seventeen blooming stems; and *Oneidium crispum*, with four; and Mr. Carson sent a *Cattleya granulosa*.

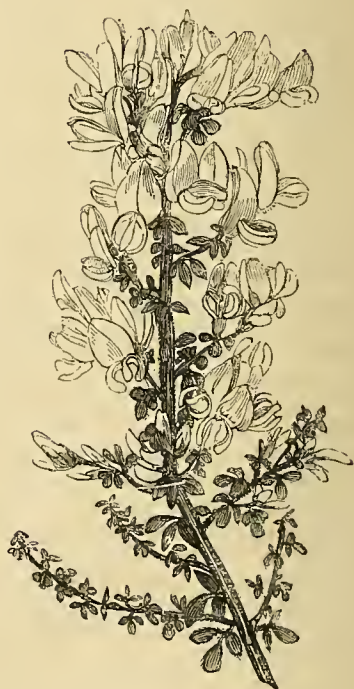
New Plants.—The highest award was made to Mr. Robertson, for *Tetratheca* (or *Tremandra*) *verticillata*; this is a very slender shrub, the branches of which are furnished with whorls of linear hairy leaves, and axillary flowers, the latter being three-quarters of an inch across, of a dark purple colour, with a black centre; it will form a very pretty delicate green-house shrub. Messrs. Veitch had a new species of *Balsam* (*Balsamina* sp.) from Java; this is a pretty delicate stove-plant, with elliptic lance-shaped leaves, either in pairs, or three or four in a whorl; the flowers are axillary; they are large and flat, of a pretty pale rose-colour, with a deeper eye, and furnished with a long spur. Messrs. Veitch also had a good plant of *Chirita zeylanica*, noticed at page 30, of the present vol.; and *Eschynanthus pulcher*, a stove plant, with oval pointed leaves, and large curved tubular deep scarlet flowers; *Calandrinia umbellata*, noticed at p. 28; *Ligustrum japonicum*, an evergreen shrub, with oval shining leaves, and large thyrses of white flowers; and *Dichorisandra ovalifolia*, an upright growing plant, with oval leaves, and a dense spike of purple flowers. From Mr. Mylam was a new species of Pitcher plant, (*Nepenthes* sp.) which has lance-shaped leaves, bearing fringed pitchers three inches long, swollen at the base, and of a brownish-green colour. Mr. Green sent a *Tropæolum* with very glaucous nine-cleft leaves, and loose compara-

tively large, creamy white flowers; it was named—evidently a misnomer—*T. pentaphyllum*. Mr. Glendinning, of Chiswick, had a strong young plant of the new hardy conifer *Cryptomeria japonica*; also *Ruellia macrophylla*, a strong growing stove plant, with large foliage, bearing small bunches of pretty scarlet flowers from the axils. There was also a plant shown, from Kew, of *Torenia asiatica*—a beautiful little thing, with mimulus-shaped flowers of a bluish lilac, with five deep purple blotches. Mr. Ayres showed *Aotus gracillima*, a neat green-house shrub, noticed at p. 26.

Seedlings.—Besides the *Pelargoniums*, there was not much of importance in the way of seedlings; and of these, those selected for reward, were Mr. Beck's Centurion, Gem, and Cassandra; and Mr. Hoyle's President. Centurion is a deep rosy pink, with very clear centre, and dark clouding, shaded off to the edge, and surrounded by a margin of rose-pink; Gem is pink with crimson maroon tops, and narrow pink edge; and Cassandra pale lower petals, dark upper ones, with a narrow pink edge; President is a medium sized flower, bright red, with a small dark spot. Mr. Beck had some other seedlings of the rosy class:—*Favonius*, *Dobsoni*, *Glow*, *Round-head*, and *Craeker*. Mr. Hoyle had *Rosalind*, *Lily*, *Rowena*, *Gertrude*, *Saracen*, *Sunset*, *Brilliant*, *Ibrahim Pasha*, and *Stromboli*. There were others from Mr. Clarke of Guernsey, Mr. Gaines, and the Rev. A. Matthews of Weston, Oxon, but none of any very great importance. Of *Calceolarius*, there were but few. Mr. Gaines had *Lady Smith*, mentioned at p. 264. Of *Fuchsias*, there were several of the rival pale-coloured ones present. Dickson's *Acantha* is a pure colour, with scarlet corolla; Gaines' *Duchess of Sutherland* is a good variety with purple corolla; Newberry's *Delicata* is pure, with purplish rose corolla, and is of good habit, and a free flowerer. The "Fuchsia Challenge," between three growers, was decided at this meeting, unanimously in favour of Lane's *Mrs. Lane*, a variety which received a seedling prize at the Royal Botanic Society's exhibition in 1845; it is a dwarf close grower, very free flowerer, the corolla very large and very deep crimson; the other varieties shown against it, were Hally's *Empress*, and Epps's *Countess Cornwallis*. *Ranunculuses* were shown by Mr. T. Setinzee of City Road; namely, *Airzee's Island Queen*, *Leander*, and *Gem*. **Heath.**—Mr. Barnes had one, called *Erica jasminiflora vittata*, in the way of these kinds; also a seedling *Cactus*, called *elegans*, in the way of *Mallisoni*, with rose and purple flowers. **Pinks.**—There were several shown, but none of particular merit; among them were Norman's *Henry Steers*, Turner's *Sir H. Smith*, Ma-

her's *Caroline*, *Alarm*, and *Emperor*. *Antirrhinum*.—Mr. Miller, of Ramsgate, had *Striata formosissima*, white, pencilled with rosy purple; *Comet*, orange buff; *Delicata*, white; *Supreme*, pale yellow; *Miss Prettyman*, yellow, pencilled with rose; *Caryophylloides superbas*, striped white and dark red: these are pretty varieties. **Hardy Lilies.**—Mr. Groom showed some of his hybrids, growing from eighteen inches to two feet high, and of various shades of fiery orange red: these were *Prince Albert*, *Ibrahim Pasha*, *Rubens*, *Emperor Alexander*, *Voltaire*, and *Talisman*.

Of other features of the exhibition, on which we have not space to enlarge, we may mention some of Cutter's *Coniferae*, and several collections of hardy shrubs; among which, in a group sent from Mr. Waterer, were a remarkable broad-leaved Box, and several *Arbutuses*. The *Pelargoniums* were very finely bloomed; the pot *Roses* were superior to those brought to the last exhibition, some of them having as many as two dozen flowers; the *Caeti* were not numerous, but well bloomed; the cut *Roses* were numerous, and finely blown.



Genista Canariensis.

GREEN-HOUSE GENISTAS.

WHEREVER half a dozen green-house plants are grown, some one or other of these *Genistas* ought to be included. Their recommendations may be stated to be—a dwarf compact habit

of growth, neat evergreen foliage, earliness and profusion of flowering, bright colour (clear golden yellow), sweet scent, and facility of cultivation.

This group of *Genista* has been, by some botanists, separated under the name of *Teline*. The most remarkable of the species which exist in our gardens are the following:—*Genista canariensis*, *G. rhodopneæ*, *G. Atleeana*, *G. bracteolata* (or *racemosa*), and *G. Spachiana*.

Genista canariensis (Canary Island) forms a dense shrub, attaining, in age, to a considerable height, but flowering freely when of the small stature of a foot or two in height and diameter. It has small trifoliate leaves, the leaflets of which are nearly oval; and bears its butterfly-shaped bright yellow flowers in short racemose spikes, terminating the short branchlets with which the larger branches are very numerous furnished. It thus forms a dense, compact, bushy plant; and through the earliest months of spring and summer—from February till the end of May, or even much later—may be had forming a mass of flower. It is a native of the Canary Islands, and was introduced so long ago as 1659. It is also called *Spartium albicans*; and is believed to be the same as *Cytisus paniculatus*, and *C. ramossissimus*.

Genista Atleeana (Atlee's) is a hybrid raised by Mr. R. Atlee, a few years since, from seeds of *G. canariensis*, and is probably a cross between it and *G. rhodopneæ*. Like the latter it has a very dense and compact habit; the leaves are trifoliate, very small, with the leaflets quite rounded. The flowers are bright yellow, and are very densely produced in lengthened racemes at the extremities of the short lateral shoots. In general appearance it accords very well with its congeners.

Genista rhodopneæ (rose-scented) is a plant of very close and compact habit, but withal somewhat lumpish. It has small trifoliate leaves, the leaflets of which are of a more obovate figure than those of *G. canariensis*; and, as compared with that species, has longer racemes of larger and deeper yellow flowers, equally profusely borne, and very delightfully fragrant. They are produced nearly two months earlier than those of *G. canariensis*, and continue in succession through the spring months. This species is also a native of the Canaries, and was first introduced by P. B. Webb, Esq., who sent seeds to the Milford Nursery, where it was raised eight or ten years ago.

Genista bracteolata (racemose-flowered) is altogether a larger plant; less adapted for pot culture, perhaps, on account of its size, but a magnificent plant for a conservatory, and also for a large specimen plant in a pot. The leaves are stalked, composed of three ovate-

lanceolate leaflets, and having a silky appearance from being covered with short close hairs. The racemes of flowers are terminal, six inches long, the flowers being large, and a clear bright yellow. It blooms in the spring and summer months. It was sent from Teneriffe, its native place, by P. B. Webb, Esq., and appears to have been first raised by Messrs. Young, of Epsom. A plant under this name is reputed to be hardy, but it cannot be the present one. In the *Floricultural Magazine* it is figured as *Cytisus racemosus*: it has also borne the name of *C. chrysobotrys*.

Genista Spachiana (Spach's) is a shrub of similar habit to *G. canariensis*, with trifoliate stalked leaves, the leaflets of which are elliptic lanceolate; the flowers are clear yellow, in ovate spikes at the terminations of the branches and branchlets, and they are sweet-scented, and profusely produced in the spring months. It is indigenous to the north-west mountains of Teneriffe, and was raised from seeds sent by P. B. Webb, Esq., to the Milford Nursery some years ago, but has only recently flowered. It is very nearly hardy, and stood for several years unprotected in the Jardin du Roi, at Paris, and was only killed down by the winter of 1844-5.

There is another species called *G. discolor*, which has been grown and flowered at the Milford Nursery; this was also received from the same source as the last, and, probably, resembles the others in general characters, but we have no information respecting it.

These plants are of the easiest culture. They propagate freely, either by cuttings or seeds; the latter make the strongest plants, in the same space of time, but there is a chance of the plants being of an inferior variety, though there is at the same time, of course, an equal chance of obtaining a superior kind. Seedling plants vary much in their qualities and habits, especially as regards the size, colouring, and profusion of their flowers; and to this source may be attributed some of the want of success in growing strikingly beautiful plants, which is usually entirely attributed to bad or indifferent management. If seeds are employed, they should be sown in the green-house, in the spring, in pots of sandy loamy soil; and if the mode by cuttings is chosen, they simply require to be planted in sandy soil, and placed in a moderately close frame, where there is a little warmth. In either case, get the young plants potted singly, into small pots as soon as it can be done, and let them be grown in the green-house, or in a pit, until the time when green-house plants are placed out of doors for the summer, when they may take their place among them; though, in the case of all small pots, a somewhat shady position

should be selected, or they will be liable to get dried and injured by the sun. They should be potted into larger pots in loamy compost, once or twice during the summer, and require of course to be regularly watered. During this time, all the strongest shoots should be stopped when they have grown two or three inches; and, by this means, the plants will in the one season, if otherwise carefully attended, form neat bushy plants, and will produce, according to their individual size, a proportionate quantity of bloom in the following spring.

If small plants are constantly required, it will only be to repeat this process annually, keeping the plants for one or two years, or more, as long as may be desired, and then planting them out in the flower-garden for the summer, leaving them to their fate. If larger plants are desired, all that is necessary is to shift the plants once or twice annually into larger pots, and they will make a corresponding advance in size. Of whatever size they are, if the strong shoots are properly and continually pruned back at the points while young, they will be furnished all over from top to bottom with small twigs, all or nearly all of which will produce flowers.

Planted out in a conservatory, where they attain larger size than in pots, they are objects of great beauty, for their colour is a peculiarly rich and lively yellow: they also furnish flowers for cutting in abundance, which is an object of some importance, where bouquets are in much request. *G. bracteolata*, from its looser habit, and larger size, is better adapted than the others for planting out in a conservatory. The others are better grown in pots till they attain some stature, before they are planted out.

Probably a hybrid between *G. rhodopneoe* and *bracteolata* would be superior to any thing we have at present; it would be so, if to the close habit, and delicious odour of the former, it added the larger clusters of flowers peculiar to the latter. There are none other than yellow flowered species introduced, so that there is no opportunity afforded for intermixing colours by the process of hybridizing.

PRIMULA INVOLUCRATA.

(Wallich.)

THE RUFFED PRIMROSE.

In this little primrose, we have a neat and desirable hardy alpine plant, which produces its white sweet-scented flowers from March to May, and sometimes even a second time during the growing season.

When at rest,—for, like all other plants with which we are acquainted, a season of repose is essential to it,—it consists of a large egg-

shaped bulb-like crown, similar to that produced by some other kinds of *Primula*, and also by the *Pinguiculas*, and some other plants. Early in the spring, a tuft of leaves is thrown up, which are smooth, shining, long-stalked, obtusely ovate, and wavy; they are of much the colour and texture of those of *Pilewort*. The leaves are almost immediately succeeded by the scape, or flower-stem, which rises about six inches high, and bears about four white flowers, surrounded by an involucre, which has the peculiarity of having its leaflets extended downwards into a sheath, as is observed in the flowers of the Thrift, (*Armeria vulgaris*.) The flowers are slightly yellow when they first open, and in dying off acquire a tinge of blush.



Primula involucrata.

Seeds of this plant were received by the Horticultural Society from the North of India, where it was found at an elevation of 11,500 feet, and growing in the neighbourhood of water.

The plant grows freely in any light loamy soil; and while growing seems to require to be somewhat liberally supplied with moisture. In the winter, on the other hand, or when they are at rest, there is danger of the bulb-like crowns perishing from an accumulation of dampness; so that during that stage it is necessary to keep the plants comparatively dry. It is this point that must determine the mode of cultivation adopted in this country. Though, doubtless, hardy enough to bear the cold of our winters, they would be liable to suffer from too much moisture, if fully exposed, unless it were on some very dry piece of rock-work. It will, therefore, probably be desirable to place the plants in pots during winter, and set

them in a dry, cool frame, planting them out among rockwork in the spring, or, if preferred, blooming them as pot alpine plants. The plant is easily increased by the small off-shoots produced from it when in a growing state, or by seeds.

The Primulas are the type of a natural order of plants,—Primulacæ; and in the Linnæan arrangement, they belong to Pentandria monogynia. A collection of the different species of Primula forms an exceedingly neat and interesting group.

GERANIUMS AND OTHER GREEN-HOUSE PLANTS.

THERE is not a plant that is worse managed than the Geranium in private establishments. It is allowed to grow its own way, and generally to get bare on the lower part of the stems, and lanky and gauky all over. Year after year the plant is permitted to stretch its limbs whichever way it is inclined to grow, and there is scarcely a set of more uncouth objects than the plants in most private green-houses. The secret of all this is, that private growers are afraid of the knife, whereas they can hardly use it too much; but when the plant has once assumed this straggling ugly form, it is difficult to do much for it: for, generally speaking, it has no eyes to break if it is cut down, and this arises from a species of cleverness which is very destructive to the beauty of an old plant. Many lady gardeners, who tend their own green-houses, are bent upon taking off slips, either to increase their stock or to give to their friends, and they fairly go to work at the wrong end. A nice shoot or two comes out at the lower part of the stems. They boast they have some nice slips coming; and as soon as they are large enough to come off, they merely break them out close to the stem, and make new plants. Now this is destroying that part of their best plants which most requires the new branches to furnish them well at the bottom, and it actually strengthens the rambling growth, which it should be the object to check. To this habit, which is certainly not so general as it used to be, but is still very prevalent, may be attributed the ugly growth of most greenhouse plants, as well as geraniums, and the constantly breaking off of these under-slips renders the stem so barren of eyes as to make it doubtful if they would break out, if the plants were cut down. But private persons, and particularly lady gardeners, are also afraid of renewing their plants, instead of depending on old ones; and this prevails through almost all their garden stock, whereas nearly every thing they grow would be the better for renewing; and it is absolutely necessary in most

subjects to renew them annually, whenever young plants grow and bloom better than old ones; and this is the case with very many plants. But supposing we really want large plants, they should only be allowed to grow in the most handsome form. Every luxuriant branch should be checked before it grows too far out. Not a leaf should be taken off the lower part of a plant; for bare stems, which can never afterwards be properly furnished, are the certain consequences of this too general practice of breaking off the lower side shoots to make new plants. Reverse the practice; take the slips from the top, and leave every thing on the lower part, and we promote bushy growth, and secure handsome plants, however old they may be.

TREATMENT OF BARE-STEMMED PLANTS.

THE best mode of making plants slightly that have become bare at the bottom, is to turn them into standards. Select the best among the stems, of which, perhaps, there are several, and cut the rest away. You must have regard to two or three points of importance: first, it ought to be a stem that carries the largest quantity of well-shaped head; for this purpose, remove the rest on one side by the hand, and hold them away from the one you propose to retain, and trying the best of them one at a time, you make your election by choosing that which has the best head; when you have convinced yourself which this should be, cut away the others close to the pot, and to the old wood; put a stake in the pot, quite upright, to fasten the stem to, that it may be made to grow perpendicularly. Cut in all the rambling branches of the head, that it may break out in other places and become more bushy. There will generally be a vigorous growth in consequence of the cutting in of so much of the plant, and this hastens the increase of the head; but as soon as the shoots are strong, those which are pushing too fast for the rest should have their ends pinched off, for otherwise they would take the lead, and cramp the growth of all the rest. Whatever shoots then come out down the stem should be rubbed off, unless they come so thick all the way down as to justify the forming of a bush once more; all partial buds, however, and they are mostly very much so, should be rubbed off, that the whole strength may go into the head. By this means handsome standards may be made of very ugly bare-stemmed bushes.

AIR IN GREEN-HOUSES.

THE circulation of air is one of the most important provisions in all kinds of horticultural buildings, nothing but that will fairly

exclude damp, or in any damp weather counteract its effects. It is not enough to open every front window, it would be far better to open only one and let down a top light a little. In all cases there should be an outlet as well as an inlet, and for lack of this many houses do not answer well for plants; a circulation of air causes a more rapid evaporation; and it is a common thing among good gardeners to open a lower window even in wet cloudy weather, let down one of the top lights a little, and light a fire. By this a free circulation is created and the house dried, although it were in the midst of rains and cloudy weather. It is too common a thing to see the top lights let down to give air to a house and no other part opened; this is all wrong, for there should be a draught; on the other hand we see all the front windows and no top lights down. Many persons build pits three or four feet high at the back, and half the height in front, and no air but what can be obtained at the top; we would always provide air-holes at the bottom, as without such there can be no draught, no free circulation, unless indeed Mr. Penn's principle be adopted for causing circulation; but even in that provision should be made for the admission of air at the bottom. When pits are built without this provision, the best mode of giving air is to pull up one light to let in air at the foot of it, and push down the next to open at top, and so on alternately through the whole range of lights, however long the pit may be. It is the same in giving air to a hot-bed, only that when the air is rarefied as it is inside, tilting the light a little lets out the steam, and the cool air will get in somewhere; but sometimes when a frame is made too close and the glass is puttied at the joints, things fog off in spite of tilting, because there is no circulation.

BRITISH GARDEN FRUITS.*

NOTWITHSTANDING the interest which has been taken in the cultivation of fruits in England, very little has been done by way of illustrating the immense variety, except in works far beyond the reach of ordinary people; and even in such as have been provided much more attention has been paid to the making of a picture, than to the production of true, unmistakable likenesses. Without, however, disparaging any previous efforts, let us deal as we find with the work before us—the production of a clever, pains-taking artist, who seems to have studied that which all artists ought to study, the selection of subjects of every-day quality that can be recognised by the million, instead of extraordinary specimens

not often seen, and scarcely to be known at all. Again, a more essential point has not been overlooked, the necessity of making accurate portraits, instead of highly colouring and exaggerating the beauty of the subject. In the first part of this work we have really true portraits of the Royal George Peach and the Jargonelle Pear, such as the veriest tyro would recognise. There is no mistaking them for an instant. They are average, and not even handsome, specimens of the fruit. There is no high colouring, no effort to make a show; they are as homely and as accurate as if they were intended for use and not for ornament. Compared with the brilliant colours, the studied beauty, and the elaborate finish of those in the *Horticultural Transactions*, and the more showy and expensive works, these drawings are tame; but they are like the thing they are intended to represent, and not mere pictures that are to embellish a book. Such plates are scarce. The garden literature of the present and former days out-herods Herod in brilliant colouring. Those who afterwards possess the reality deplore the falling off, as compared with the pictures they have admired, and which, perhaps, induced them to buy the reality. We cannot but congratulate the lovers of fruit on the fidelity of the "*Coloured Illustrations of British Garden Fruits*." It is so rare that we find artists content with ordinary specimens, such as we see every day; and so much more rare to find them keeping down their pencil to the point-blank matter-of-fact portrait, that the work is quite refreshing; and we only hope it may proceed as it has begun, for we desire no better guide, even for those unacquainted with the subject, to enable a man to recognise the distinguishing characteristic of all the really distinct varieties of the various families. Of the letterpress we need say but little, it is brief, and to the point; *ex. gr.*—

PEACHES.

"The Peach, which is one of our most desirable wall-fruit trees, requires but little care in its cultivation, in comparison with the delicious flavour and beauty of its fruit.

"The soil required by the Peach is easily obtained: after the hole is dug along the wall intended to shelter the tree, the following proportions should be thrown in:—three barrows-full of fresh dug turf, and one barrow-full of road scrapings; the whole must be enriched with garden or vegetable mould. We must here observe that, very frequently, wall-fruit trees are ill treated from false economy of the ground in a kitchen garden. The roots of fruit trees ought never to be disturbed by digging about them, on account of the finer fibres, which get injured by the spade; and, as a general rule, we would advise to have

* Coloured Illustrations of British Garden Fruit, with Descriptive Letter-press. By H. L. Meyer. London: Longmans, Paternoster-row; Hatchard, Piccadilly.

only a strip of ground a foot wide all along a wall which has fruit-trees against it, and to keep the space between the trees, right and left, for lettuce, radishes, &c., but never to bring them in front of the stem of the tree at all. It is further necessary to rake the surface of this little border from time to time, and also to use the Dutch hoe occasionally, so as to keep the surface clean, and in a proper state to receive the rain and atmospheric effects.

"When the tree is planted out, the proper depth is about six inches; this must be carefully attended to where the soil is wet, for fear of cankering the root, but in dry ground it matters less.

"The month of October is the proper time for moving Peach trees, and February and June for pruning them; the latter consists in cutting off the superfluous branches, and nailing the remaining ones to the wall.

"Some experience is requisite to know which branches to cut away and which to train, although, as a general rule, the old wood may be cut away, and the new shoots left, provided they grow in a direction to be easily spread along the wall; the shoots, which grow straight forward out of the tree, must all come away, as they are neither sightly nor convenient to train.

"The next operation is one requiring great care. As soon as the blossom buds show themselves, they must be thinned, in order to prevent the tree from exhausting itself in bearing a greater quantity of fruit than it can possibly ripen. While the fruit is ripening, a constant watch should be observed, in order to keep the tree as clean from insects of all kinds as possible. When the fruit ripens, the wasps begin their attacks; the best, indeed the only method of counteracting which is by suspending half-a-dozen bottles containing moist sugar and water, about the tree.

"To retain too many leaves on a fruit tree in bearing is not desirable; but we cannot advise thinning them frequently, as it is as much by the moisture, and other properties contained in the atmosphere which the leaves absorb, that the fruit swells, as from the nourishment drawn into the tree by the roots."

THE CEANOTHUS, OR RED ROOT

The name *Ceanothus* is altered from a name (*Keanothus*) given by Theophrastus to a spring plant, and derived from *kenteo*, to prick. The plant of Theophrastus is not, however, the same as the modern *Ceanothus*. The genus belongs to the natural order Rhamnaceæ, and in the Linnean arrangement to *Pentandria monogynia*. The species enumerated

below consist of evergreen and deciduous shrubs.

CEANOTHUS AMERICANUS (the American Red-root, or New Jersey Tea) is a deciduous shrub from North America, growing from two to five feet high, with ovate, acuminate, serrated leaves, and elongated axillary thyrses* of small white flowers, which appear in June and July, and are succeeded by bluntly triangular fruits. The whole plant is pubescent, or downy; it is found in the dry woods from Canada to Florida, and in most parts of the North American Continent; is commonly known by the name of New Jersey Tea, in consequence of the leaves having been dried and used for this purpose during the war of independence. In Canada it is used for dyeing wool of a nankin or cinnamon colour.

CEANOTHUS AZUREUS (the azure-flowered Red-root) is a beautiful evergreen shrub, of robust habit, nearly, but not quite hardy. In mild winters, and in favourable situations as to soil and climate, it will stand out without injury; but in winters of more than ordinary severity, or where the situation is unfavourable, it is liable to be killed down. Trained against a wall, where temporary protection can be afforded to it when necessary, it will grow with the greatest facility, and producing, as it does, its bunches of lovely blue flowers in great profusion, it is particularly worthy of such a situation; in fact, wherever there is a wall devoted to plants of this nature, (usually called a conservative wall,) if but half a dozen plants can be accommodated, this ought by all means to be one. It is a free growing plant, attaining a considerable size when trained over the surface of a wall, but seldom rising very high when planted out singly; its nature is to spread over a larger surface, reaching perhaps five or six feet in altitude. The leaves are ovate-oblong, and acutely serrated; and the flowers, produced in May, which are of a light and most lovely azure-blue, are borne in dense elongated panicles from the axils of the leaves, near the upper part of the stems and branches. It is a native of Mexico.

CEANOTHUS INTERMEDIUS (the intermediate Red-root) is a deciduous shrub, from two to four feet high, with oval-oblong leaves, and loose corymbose panicles of white flowers, produced in June and July. It is a native of North America.

CEANOTHUS MICROPHYLLUS (the small-leaved Red-root) is a low deciduous shrub, seldom reaching more than two feet in height, with very small leaves, of an oblong-obtuse form and quite entire. The habit is somewhat decumbent, and the whole plant is of a

* A thyrse is a bunch of flowers, arranged like those of the Lilac.

delicate nature ; the flowers are white, in loose terminal corymbs, and are produced in July. It is found in the sandy woods from Carolina to Florida.

CEANOTHUS OVATUS (the ovate-leaved Red-root) is a deciduous shrub, attaining from two to four feet in height ; the leaves are ovate and serrated, and the flowers white, produced in June and July. It is from North America.

CEANOTHUS SANGUINEUS (the blood-red branched Red-root) is found near the Rocky Mountains on the shores of the Missouri ; it is a deciduous shrub, from two to three feet high, with oblong-ovate serrated leaves and white flowers, in panicles not longer than the leaves, produced in May and June. Its branches are of a blood-red or purple colour.

CEANOTHUS TARDIFLORUS (the late flowering Red-root) has cordate-ovate, serrated leaves. It is a deciduous shrub, of three or four feet in height, introduced from North America ; and is very closely allied to *C. americanus*. Its flowers are white, produced in September.

CEANOTHUS THYRSIFLORUS, (the thyrses-flowered Red-root,) a very beautiful species, is not happily named, as they all produce their flowers in the peculiar arrangement which, in botanical language, is called a thyrses, and of which the common lilac and privet furnish familiar examples. It is a free growing evergreen shrub in its native country, North America, attaining the size of a small tree. The leaves are rather small, of an ovate figure and glossy, and the flowers are light blue, in large panicles, or thyrses : they are very freely produced ; indeed the native plant produces blossom so freely, as almost to envelope the trees, and this disposition seems to be manifested by the cultivated plants. It is, however, not sufficiently established in this country to exhibit its true character.

CEANOTHUS VELUTINUS (the velvety Red-root) is a robust growing plant, not yet introduced. It is a very beautiful evergreen species, growing from six to eight feet high, with large, broad, obtuse (sometimes sub-cordate) leaves, and terminal panicles of white flowers. It is found on the sub-alpine hills near the source of the Columbia.

The evergreen species of this genus are exceedingly handsome plants, and well deserving of extensive cultivation. They will grow to the utmost perfection in a compost of peat and loam, in any situation where the subsoil is duly drained. It has already been remarked that *C. azureus*, is barely hardy, and therefore requires some such protection, as being planted against a wall : it is of little consequence what aspect the wall might bear, provided it was not north ; and even this would only have the effect of throwing the

plant later in its season of blooming. Whenever it is introduced to such a situation, the soil should be prepared for it, by putting in a good and permanent drainage a little below the ordinary level, and then on this placing two feet or so of the prepared compost of turfy loam and peat, to plant in. The plant should be placed six or eight inches from the wall, so as to allow for the increase of size in the stem ; and the roots should be carefully spread out in radiating lines from the plant, near the surface, and carefully covered in with the soil : the stem of the plant, at the point whence the main roots issue, should be nearly level with — say half an inch below — the surface of the soil. These little matters—routine matters indeed in the practical gardener's art—are necessary in order that the plants, while they make proper and sufficiently vigorous growth, may not from any cause produce shoots, which will be liable to be immature when the winter season arrives : in other words, the object of these arrangements is to procure healthy and well-ripened shoots, rather than vigorous ones ; such shoots being much more likely to withstand, without injury, the inclemency of our winters. And as was before remarked, they are with gardeners matters of routine, practised with this special object in view.

The same remarks apply to the act of planting any other choice plants which are required to bear the winter's cold and moisture.

The other species grow in any tolerably good garden soil, though a preparation by the addition of compost, such as that above referred to, is an improvement not lost on the plants. The species generally prefer a situation rather dry than otherwise ; in fact, none of them affect particularly moist situations. Generally speaking, however, gardens which are drained sufficiently for the purpose of a garden, will not refuse to grow such shrubs as these : and these little peculiarities are named, merely that when any trouble or preparation is made, it may be done in a right direction.

All the species may be propagated by layering in a light soil ; and also by cuttings planted in sandy soil under a hand-glass.

DAHLIA SHOWING.

NOTWITHSTANDING exhibitors have the advantage of plainer directions than the showers of almost any other subject, they pay so little attention to the main points, that they give endless trouble to the judges who have to estimate the comparative merits of stands ; because the best-grown flowers are generally the most deficient in some essential points, and lose all the benefit of superior culture through the growers' inferior taste. As this

flower is assuredly in the ascendant again, and Dahlia shows will be among the most important, we hope we may be permitted to give a lesson, on showing, to those who appear to want it, and place the properties of the flowers in their proper rank. When this flower was first made a subject of exhibition, and the *Horticultural Journal* laid down the properties, there was more attention paid to the chief point than there is at this day. The part to which we allude is the centre, the perfection of which is indispensable: instead of which, we find even the first winning stands containing sunk eyes, cross eyes, and what, for want of a better word, we must call confused or broken eyes. Now the absence of symmetry in the centre of a flower is only one degree better than a regular open eye or yellow disk; yet vain have been the efforts of writers and teachers to impress upon the exhibitor's mind the necessity of looking upon this as a fatal blemish; and consider the perfection of the centre to be the most important property of all. We would almost sooner see a pointed petal than a bad eye; and we wish we could impress upon the minds of judges the duty of making a severe reduction in the other merits of a flower of which the centre shall be found deficient. An open or cross eye should be all but a disqualification; and if we could only persuade judges to be severe, it should be at once thrown out. It has been said, by the only authority to which we can look up, in a matter of this sort, that a confused eye is as bad as an open one, and this is just and true; for an open eye can always be closed if a man is allowed to show confused eyes: for, by bruising, and opening, and doubling, and twisting the centre petals, it is easy enough to make them hide the disk. To pass a confused eye, or centre, is only encouraging trickery; and the sooner it is made known that a bad centre shall be a positive disqualification, just as a run petal is to a pink, the better; and the Metropolitan Society must do this. For unless it be began there, the example elsewhere would be useless. It is part of their own doctrine, and the laxity and carelessness have originated in trickery. The society which undertook and assumed to be the leading authority on Floriculture, during the period that the Metropolitan Society was confined to a mere staff, like a disbanded regiment, is now no more; but it did immense mischief while it lasted. The management of the prizes rendered it necessary to put the worst instead of the best first, and to overlook many positive disqualifications even in the foremost stands; and the eye of the younger florists became so familiar with imperfect flowers, that it is no easy task to bring back the pure taste to its original healthy state. We cannot help wish-

ing that the "Properties of Flowers" were published in a collected form, and issued again with the authority of the Metropolitan Society; for the committees could then be parties to their circulation, by announcing their determination to stand by the tests there declared to be the true ones, and thus make officially a uniformity of taste which should be palpable to the visitors at shows; for, if the public knew what a flower ought to be, it would be a great check upon the too general practice of awarding prizes wrongfully, and also, to the careless adjudication of rewards, without proper attention to the established rules.

We would impress upon all those who have to show, the necessity of conforming to the standard in question, and upon judges the duty of enforcing it in their decisions; first, by throwing out all confused eyes, all open eyes, and all cross eyes, be the flowers in all other respects ever so perfect; all stands with a mutilated flower, or a dead flower, or two flowers too much alike, whether the same variety or not; then they may judge the remainder upon their several merits. For instance, the round outline, the globular face, the symmetrical disposal of the petals, and the doubleness. Now, sunk-eyes spoil the globular face; and, therefore, take away that essential point from what would be otherwise good flowers; and it first being reduced to a comparatively easy task, by throwing out the disqualified ones, there will be no difficulty in giving the prizes to those which have the greatest number of good points, which points those who are used to it can see at once without calculating, but which may be estimated by the less experienced by counting only. Say they first see how many blooms there are with round outlines, next how many there are with globular faces, that is, faces the shape of a ball, and well up in the centre; they may next count how many are sufficiently double; then how many are symmetrical, that is to say, the petals symmetrically disposed; these summed up, will give us the relative value of each stand, so far as the sterling qualities of a flower go: and unless there is something out of the ordinary way, a great advance is made towards justice. But there may be stands pretty near to each other in value up to this point; there are other points which may be called in question to guide us quite home; for instance, variety of colour, that is, contrast which gives brilliancy, and then uniformity, and lastly, size. For it is asserted that size should be the very last thing to consider; although, from the very circumstance of too much weight being given to this least of all good properties, growers have been induced to show for size, at the expense of some of the best possible points: the

same flower that is beautifully perfect at one period, will in a day or two more be greatly increased in size, but the petals lie less symmetrically, the eye is becoming confused, the vivid colour fades, the form changes for the worse, and yet such has been the disposition to give size the preference, that all these things have been overlooked, to the disadvantage of smaller though infinitely more perfect flowers. Under these circumstances, we hope and trust that judges and societies will declare themselves determined to abide by the rules laid down for the perfection of the flower, and thus correct an innovation which has been encouraged too much, by the various contrivances to put prizes into wrong hands, and increased, by force of example, among the mongers.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

AUTHORITIES.—*Journal of Horticultural Society*, JI. H. S.—*Gardener's Gazette*, G. G.—*Gardener's Chronicle*, G. C.—*Gardener's Journal*, G. J.—Quotations from which are duly acknowledged by the respective initials attached to each.

THE PERIPLACA.—In cases where large quantities of the above twining shrub are required, I have found that the best and most expeditious mode is to trim the old plants of their shoots in the month of August or September; and insert these shoots, just as they are taken off, in lines four inches apart, and at a depth of two to three inches. The branches should of course be laid down horizontally and completely covered up; and, in order to insure a full close crop, no part of the line should contain less than three branches, that is, they should be put down in small handfuls. In the month of the ensuing March, these branches will have sent up strong shoots, and almost as thickly as an ordinary crop of corn; and in the autumn they should be taken up and potted. Their after treatment is a mere matter of routine, known to every one. This shrub is very ornamental, and especially adapted for arbours, or for the partial covering of rustic-work, &c. To the classical planter, no plant carries with it a more pleasing association, being a native of one of the most noted parts of Greece.—*J. G.*

FUCHSIA CORALLINA.—This is a seedling; it was sent from Lucombe, Pince, and Co.'s nursery at Exeter, to the Royal Botanic Society's Exhibition in May, and there received a first-class seedling prize. Viewed without reference to "properties," this is a very remarkable and exceedingly showy plant; and, to my taste, much before almost all the varieties raised of late years, in point of beauty. Those who know the older species of *Fuchsia* will readily form an idea of this kind, when I state,

that, in general character, it somewhat resembles the old *F. virgata*, but is perhaps three times as large. It has the same clear neat stemmed habit; the leaves have a reddish tinge, and the flowers are of the texture of those older kinds, and much the same in colour; that is, with clear bright coral-red sepals, and purple petals. The leaves in their figure, and in their reddish tinge, and red veins, resemble those of *F. radicans*, a not very common trailing species, which may probably have been instrumental in producing Messrs. Lucombe's variety: they are large; perhaps four inches long, and two broad. The flowers, as before-stated, are of very large size; and they are produced from the axils of the leaves, on long stalks. Some idea of their size may be formed, when it is stated, that from the tip of a berry, not the base, to the tip of the stigma, which is not unusually prolonged, measures somewhere about four inches.—*M.*

SUMMER PRUNING.—There is hardly a more important operation in the whole course of practical gardening than the proper regulation and distribution, during summer, of the shoots which are annually produced by fruit trees; and this is particularly so in the case of such as are trained to a flat and limited surface. Yet, notwithstanding this, I hardly know of a practical operation which receives less due attention, or which is so often done in an imperfect and improper manner. A pretty general conception seems indeed to be entertained that the shoots should be thinned, but this is done at considerable intervals, and then by wholesale. Such treatment, I conceive, must be hurtful to the trees; it must be injurious to them to allow their young shoots to grow for a time in the thick and crowded state in which they are always produced by plants such as these, whose developing surface is limited, and then suddenly and severely to thin them, and thereby submit the shoots which are retained—not to more light and air or a greater degree of exposure than would be beneficial for them, in a general sense, but—to a far greater degree of exposure than the crowded state in which they have previously been growing has enabled them to prepare themselves to bear. Such alterations as these must, in fact, derange the exercise of the functions of these actively-growing parts; and though the effect of such derangement may not, in consequence of innate energy in the trees, be at once apparent, it must become impressed upon the system, and will show itself sooner or later. The work of thinning the young shoots of trees, such as those under consideration, to be done so as to secure its full advantage, and to avoid as far as possible any of the evils brought on by its being improperly performed, should be of

daily occurrence. Day by day should a comparatively limited proportion of leaves, buds, or shoots, be removed; and then the vital functions of the remainder, instead of being deranged by the removal, would be assisted by it to discharge themselves more completely, to the advantage of the tree, and to the improvement of its produce.—*G. J.*

PROPAGATION BY CUTTINGS.—Considerable experience in this interesting branch of gardening, enables me to state that the rooting of most soft wooded cuttings will be greatly accelerated by retaining a leaf at their base. The reason of this appears to be, that the leaf or leaves left continue to perform their proper functions, and thus prepare at the very spot where it is required a supply of organizable matter which is almost immediately expended in the formation of roots, whereas if no leaves are left at this point, a suspension of vital energy must for a longer period be the consequence, as the duration of this suspension will be regulated by the distance of the next leaves from the base of the cutting, and the condition of the cutting itself, with respect to the softness or firmness of its tissues; in other words, the longer the internodes of the cutting, and the softer its texture, the greater will be the benefits derived from this practice, and *vice versa*. Those who are conversant with the principles of propagation, are aware that the chief desiderata necessary to ensure success, are, a judicious application of the important agents, air, light, heat and moisture. And if it is important in all cases to regulate the application of these agents with nicety and precision, it is more than usually so in carrying out the system above recommended, as the more leaves there are upon a cutting, the more liable will it be to suffer from being subjected to a very powerful application of any one of these agents. For instance, if air is too freely admitted, in the absence of the other counteracting agents, it will only drain the cutting of its stored up juices; or if light be admitted in excess, it will only paralyze the energy of the cutting, by effecting a too rapid decomposition of its carbonic acid gas. Similar injurious effects will follow the application in excess of the other agents. If the cutting is subjected to a high temperature, this will cause an immediate extension of its stems and leaves, at the expense of the organizable matter which ought to have been expended in the formation of roots, or if moisture is administered too copiously, the complete destruction of the cutting will very soon be the result, as the leaf or leaves retained for the express purpose of accelerating the emission of roots from their damping off, hasten the decomposition of the other parts. It seems, then, that the more leaves there are upon a

cutting, the more care will be necessary; but if that care is exercised in securing it such a genial atmosphere, and such an amount of light and air as will prevent it from being either 'drawn or flagged,' roots will sooner be emitted than if fewer leaves are left. To prevent the formation of suckers, the bud at the base of the leaf, at the bottom of the cutting, should be extracted.—*G. J.*

TROPÆOLUM TUBEROSUM.—Plants of such a nature as this *Tropæolum* would naturally enough be planted in a generous compost, and hence would grow rapidly and luxuriantly, developing leaves, not flowers. So again when planted out, the ordinary soil of a garden is too rich, too deep, and too moist for such a subject; it would still grow too freely, and fail to produce even a fair modicum of blossoms. What is wanted with this plant is to starve it, and to roast it; treated in the manner which is thus implied, I have seen it presenting a beautiful appearance, and I would strongly recommend a trial of the plan to those who have plants by them, established in pots. What I intend by starving them, is to plant them in a thin layer of poor gravelly soil, resting on a hard and almost impervious (and of course dry) bottom. What I mean by roasting them, is to choose a situation for them, where they may be fully exposed to the burning heat of a summer's sun, unsheltered and unshaded: no place can be better than in front of a wall having a south-west aspect. If those who have hitherto despised *Tropæolum tuberosum*, will treat it something after this manner, and give the matter a degree of consideration, they will have secured two results of some importance. In the first place, they will find that the plant is not deservedly despised; in the second place, they will have learned a practical lesson in the mode of inducing a blooming state in plants, which they will do well to bear frequently in mind.—*G. J.*

RHODODENDRON HYACINTHIFLORUM.—At the June show of the Royal Botanic Society, Mr. Waterer of Knaphill,—one of the most extensive growers of American plants in the country,—produced a very distinct and pretty *Rhododendron*, bearing the above name. The flowers are small, and of the ordinary purplish colour, common among this class of plants; but they are double—at least they are semi-double; and individually are not at all inaptly compared to the blooms of a large flowered semi-double *Hyacinth*. Flowers of this form growing in bunches like those of the *Rhododendron*, look somewhat novel, and altogether we regard the plant as a desirable addition to our hardy-flowering shrubs. We are informed by Mr. Waterer, that it is not of his own raising; but, as he believes, was imported from the Continent. It is

somewhat remarkable, perhaps, that double-flowered *Rhododendrons* should be so rare, when we have double varieties of the nearly-related green-house *Azaleas*; and in many of the single varieties of these, there is a tendency to change the stamens into supernumerary petals; but doubtless the matter will now excite attention, and we may get them in considerable variety.—*M.*

NEW CALCEOLARIAS.—It is gratifying to see, that, in the *Calceolaria*, a flower which has, perhaps, fallen rather into distaste, there is much improvement going on. Some of the seedlings of this season are of excellent properties, though the majority of them still run on those oddly and thickly chequered colours, of which the variety called *Standishii* furnishes a familiar example. Mr. Kinghorn, of Twickenham, seems to be taking the lead, both this season and last. His Exemplar, shown last season, was a striking variety, with yellow markings on a crimson ground. This season he has produced some of very remarkable merit; exhibiting, in conjunction with large size, even outline, and clear and distinct colouring, that fulness on the face which is indispensable to a first-rate variety. Those especially referred to are *Masterpiece*, which received the first prize, both at Chiswick and the Regent's Park: this has yellow dashes on a rich maroon ground. *Puissant* is another fine variety, with dark-orange dashes on a reddish-maroon ground; and *Julia* is cream-coloured, with crimson dashes. *Emperor* and *Oscar*, both of which received prizes at the Regent's Park, have dark maroon grounds, with yellow dashes. These are all raised by Mr. Kinghorn, and are desirable even in limited collections. Mr. Gaines, also, appears to be paying attention to these plants. Several of his, shown last year, were of fair average merit; but not so remarkable as the last named. *Lord Hardinge*, shown this year, is bright maroon with yellow dashes; and *Lady Smith* has lemon-coloured ground, with dark-crimson markings. *Marmion* and *Marquetry* of Mr. Kinghorn's batch this year are also very good dark-chequered varieties. Mr. Standish had some good varieties last year, with a pale-creamy or whitish ground, with rosy and purple dashes, which are distinct among the yellow-chequered flowers, which are rather common. *Matchless* and *Orinda* in this way are good. Any one who is buying *Calceolarias* now, must not omit Mr. Plant's carnation-striped varieties, which though neither very perfectly marked, nor possessing any of the properties of fine flowers, are yet a step in a right—and that a novel—direction, as regards colour. There are those who deem a decidedly shrubby habit indispensable in a first-rate variety; but in this I cannot

say that I can individually concur; and, indeed, the point seems to be omitted by those who raise these seedlings. I consider the general habit of those varieties which are classed as half-shrubby, to be the most preferable; the stems are always stronger, and the flowers more numerous and better arranged; and they have not—at least as a class—the objection which attaches to some, if not all the truly herbaceous kinds, of being difficult to cultivate.—*M.*

DOUBLE STOCKS.—Few hardy plants are more valuable than the different varieties of *Brompton*, *Queen*, and *Ten-weeks Stocks*, and at the same time there are few plants upon which there is so much uncertainty. I shall endeavour to point out the surest means of obtaining double flowers, and at the same time show how they should be treated, so as to have plants in bloom from April to November, and even in very mild winters all the year round. In commencing, first procure, if possible, seeds of a good kind (that is, from some place where more double than single ones are produced from the seed), for in so doing you may save yourself much disappointment. They are exceedingly easy of cultivation, merely requiring to be sown in a rich loamy soil, not very retentive, and at different seasons, so as to produce a succession. The *Brompton* and *Queen Stocks* should be sown at two different times; one about the end of June, and again in the end of July, in a border or bed not very rich or confined, merely screened from the mid-day sun. If such a situation is, however, not convenient, sow in the open ground, and put a few twiggy branches over the beds, placing the branches flat on the ground, which will be quite shade enough, removing them again as soon as the young plants begin to show their first rough leaves, otherwise they become drawn, and consequently never flower well.

In sowing the *Brompton* and *Queen Stocks*, always sow rather thinly, and on ground which is somewhat firm; for if sown on very loose fresh-dug ground, and if the soil is rich, which it should be, the plants grow too rapidly, become soft, and are very liable to be destroyed in winter, if the latter should prove severe. When large enough, which will be by the beginning or middle of August, transplant them into a moderately rich soil, and water freely after planting, if the weather is dry, but if possible defer planting until showery weather. In making a selection for transplanting, first reject all the very strong growing plants, because they are almost sure to be single ones, and also those with a single tap root, preferring only the smaller stunted plants, with horizontal fibry roots, as those in most cases produce double flowers.

In planting at this season, much of the success depends upon the kind of winter which follows; and it is a very good plan to plant one portion on very poor soil, to stand if the winter should prove very severe, and another on rich soil (these should be the produce of the later sowing), to produce fine flowers, in case the following winter should prove very mild. These plants will flower from the end of April to the middle of July, or even longer, and should be supplied with manure-water once or twice in April and May, particularly if planted in rather poor soil.

The next sowing should be of Ten-weeks Stocks, for potting and keeping in cold pits or frames during winter, to be afterwards turned out into the open borders about the end of April; the seeds of these are best sown on a good rich border, about the beginning of September, in the same manner as those of the preceding, and a selection should be made in the same manner, rejecting the very strongest and tap-rooted plants as much as possible. When the plants are sufficiently large, pot them in 5-inch pots (48s), putting three or four plants into each pot round the side, and in very rich compost; they must be shaded for a few days, and afterwards placed in a somewhat sheltered situation, so that they may remain out of doors as long as possible before they are placed in the pit for winter; otherwise, if placed in the pit or frame too early, they get drawn, or lose their bottom leaves and become unsightly. In spring, as soon as they begin to grow, allow plenty of air and remove the lights entirely on very fine days, watering frequently with manure-water, or what is better, placing a portion of rotten dung on the surface of the pots. When the plants begin to show for bloom, the single ones can at once be pulled out, leaving only those that are double; these plants will flower in April and May.

In sowing in spring for a succession to flower from the middle of July until September, sow the various kinds of Ten-weeks in the open border, in very rich soil, about the middle of March, and thin out the strongest plants at first, and afterwards all the single ones as they show bloom (unless you want them for seed), and by the end of July you may have nothing but a bed of double Stocks; by transplanting some of the smaller plants about the end of May into very rich soil, you may have a later succession of bloom; and, finally, if some purple and white Queen Stocks are sown at the same time, and treated in a similar way, they will commence flowering in August, and remain in beauty until they are destroyed by winter weather. If the winter should not prove severe, however, these plants will keep on blooming until those sown in July

take their place, thus producing a constant succession all the year round.

In many cases the most beautiful of all the kinds of Stocks, the Bromptons, get killed by the severity of the winter; but this may be avoided by taking up the plants before winter and potting them, or by planting them in a spare Melon pit or cold frame, and afterwards replanting them into the open ground in spring, but they never flower so well or grow so large as when they survive the winter in the open border.

In saving the seed much depends; for Stocks, as well as all highly domesticated plants annually reproduced from seed, are very subject to degenerate, and it requires a constant vigilance to preserve or improve the race. I shall now endeavour to point out what is the best means of obtaining double flowers with good colours. In selecting the plants from which to save seed, choose always those with brightest and clearest colour, broadest petals, densest flower-spikes, most numerous side branches, and dwarfiest habit; and avoid all those plants with few lateral branches, robust habit, thinly-set flower-spike, and broken colours. Much also depends on the season; for if the summer should prove a very dry and warm one, the seeds will be much better as regards the production of double flowers; while, on the contrary, if the summer should prove to be cold and wet, nearly all the plants will be single, and this accounts why the German-saved seed is always superior to that saved in England.

It should also be observed that the seed of each colour and kind of Stock should be saved at as great a distance from the other as possible; otherwise bad colours are the effect. The bottom flowers on the spike only should be allowed to produce seed, which is easily done by pinching the top ones off; and finally, the best seed is obtained where large quantities are grown, and where the plants are allowed to remain where sown, and treated as above stated. There are some who suppose, because a plant with single flowers be surrounded by double ones, it must produce seed from which nearly all the produce will be double; but I need hardly say that such is not the case; for the quantity of double flowers has no effect upon the single, but merely indicates that the breed is a good one.—*G. C.*

CATESBEA SPINOSA.—This very singular stove plant is not much seen, though it is an object of considerable interest. Miller mentions the plant, but it was figured by Curtis, who informs us that there is only one species described by authors; and Mr. Catesby, the author of the Natural History of Carolina discovered the plant in the island of Providence, where he saw but two, from which he

gathered the seeds, and brought them to England. It may be increased from cuttings, and reared from seeds; but singular as the plant is, but few cultivate it. The seeds should be imported in the fruit, sown in pots, and plunged in bottom heat; as they advance in size, they may be picked out, and finally potted, one plant in a pot, when they must have ordinary stove treatment. The flowers are neither green nor white, but a little of each. It flowers rather scantily four or five months of the summer.—*G.*

QUASSIA AMARA (Bitter Quassia).—This is a very beautiful stove evergreen shrub, with racemes of bright scarlet flowers, red stem, and veins of the leaves the same colour, while the other portions are bright green. The flowers are singularly formed, the sepals twisting round, and never completely opening. It flowers the greater part of the summer. It only requires the common stove treatment. The plant is a native of Surinam. The mode of propagation is by cuttings under a bell-glass, with bottom heat; and as soon as they are struck, pot them into large sixties, in which they may be continued until the roots touch the sides of the pot, which will be the guide for shifting. The soil best adapted for the plant is loam, dung, and peat earth, equal parts, and see to a good drainage.—*G.*

FERRARIA UNDULATA (Curled Ferrara).—This is one of the most beautiful objects, and we may almost say the most ephemeral, the bloom only lasting a few hours in perfection, though a succession of flowers keeps up the interest from day to day, during the brief period of its blooming. It is said to be a native of the Cape, and to require similar treatment to that given to all Cape bulbs. It seems to have puzzled the botanists as to what genus they should refer it to; and, accordingly, we have it under the various appellations of *Flos indicus*, *Gladiolus indicus*, *Narcissus indicus*, and *Iris stellata*. The name of Ferrara was given by Burman, in compliment to Joh. Baptiste Ferrara, by whom it was described and figured in his *Flora seu de Florum cultura*. It was figured also in *Curtis's Botanical Magazine*, and has been one of the neglected plants only, so far as we can judge, from the ephemeral nature of the bloom. It flowers in the spring, throwing out an annual bloom from February till May, and deserves a place in every collection of plants, and especially where other Cape bulbs are cultivated: nor does it say much for the taste of many, who hold first-rate establishments, that this class of plants is so much neglected. It would be well if some of the societies would draw attention to the cultivation of Cape bulbs: they are beautiful subjects, and should not be neglected.—*G.*

THE POTATO (*Solanum tuberosum*) has

been found in a wild state at Valparaiso, about Lima, and near Bogota, and is, no doubt, very generally distributed along nearly the whole range of the Andes, and perhaps of some other parts of South America, although it does not appear to have been met with on or near the eastern coast of that vast continent. In a wild state the tubers are very small, and have an unpleasant bitter flavour. It appears to have been cultivated by the Indians from time immemorial, and to have been rapidly disseminated by the Spaniards, and other European visitors, to the new world. At least, this seems the only way to explain its being introduced from Virginia by Sir Walter Raleigh and his unsuccessful colonists, about 1586, as the potato has never been found in a wild state in North America. It appears to have reached other parts of Europe at an earlier period, through a different channel; but many years elapsed ere it was cultivated to any extent. It also appears to have been grown in large quantities in Ireland, for a considerable period before it became at all general either in Scotland or England. In Scotland it was first cultivated to any extent about 1728; but in England, with the exception of Lancashire, it made little progress, as Miller in his dictionary (edition of 1771) names only two varieties, until, in 1796, at least seventeen hundred acres were planted with this root in the county of Essex.

The wild potato differs very little in external appearance from the cultivated varieties, except in invariably having white flowers, as far as they have been observed. The tubers are small, and vary with red and yellowish skins; and, as mentioned before, are reported to be bitter in flavour; but from wild tubers grown in this country, the produce was found, when cooked, to possess the ordinary flavour of young potatoes. It would thus seem that very little cultivation was necessary to fit them for food.

WATERING MUSHROOM BEDS.—Although it is necessary to water Mushroom beds sometimes, it is looked upon as a precarious operation, and is often followed by the destruction of what spawn may remain in the bed. Water of a temperature of 80 or 90 degrees is generally used. Mr. Smith, of Streatham, says, "To a bed of sixteen feet by six, I have used forty gallons of water, the temperature being 164 degrees. The result of this experiment was truly astonishing, for in ten days the bed was again covered. I commenced gathering from the bed in December, and watered it in March, and have at the present time (middle of May) plenty of Mushrooms." To realize this success the bed should be well made, and not over moist at the time of the application.



GLENNY ON THE CARNATION AND PICOTEE.

THE Carnation and Picotee are of the most favoured and favourite class of florists' flowers. In addition to their beauty, which is almost without equal, they have a fragrance possessed by no other garden beauty, and only rivalled by that of the rose. In form, they are rich, and in colour, and in the disposition of the colour, they are, perhaps, superior to all others. That they are capable of improvement, cannot be denied; because the very best and most perfect may be excelled, if we can command the improvement which the model or standard suggests, and which, on due consideration, the most prejudiced of the old florists, who are wedded as it were to some of the present varieties, must admit would be perfect if attained. The principle, however, of the plan upon which the properties of florists' flowers are laid down, is such, that the most persevering of our florists, amateur or professional, can hardly hope to attain perfection, although they are obliged to admit that, if it were attained, it would be the climax of beauty; and the only objectors found their objections on the hopelessness of attaining it. The present race of Picotees far excels the best of a few years ago; and there is a good deal to say in behalf of a standard which comprises all the properties that can add to the beauty of the present good varieties, all of which, the very best of which, have some distinguishing deficiency, although some are much better than others. The splendour of a first-rate bloom of either a Carnation or Picotee, is, as we have said, hardly to be excelled by any garden beauty;

and up to a certain point of excellence, they are less uncertain than many other florists' favourites; but it is only up to that certain point. It is more rare to get a grand bloom—that is to say, any thing extraordinarily fine, than with many other flowers which are in general much worse. Take the auricula, the tulip, the dahlia, the pink, and many other flowers, and we find it frequently difficult to get any thing like a fine show-bloom, even among a great many; whereas we have known, in a favourable season, a man to cut twelve blooms off twenty-four plants of Carnations and Picotees, and such as to make an average stand. The flower, up to an average quality, is nearly inimitable; although those who grow a large collection will always have more chance of obtaining specimens above the average. In short, we may say that, with care, there will hardly be found any of a good selection, that are not good enough to add beauty and variety to the assemblage, although they may not be all we could wish for show; their fragrance adding not a little to their value. There are few flowers that can be grown moderately well so close to London, or any other metropolis, and, therefore, scarcely any one that is so extensively cultivated within the influence of smoke. It is quite certain they will flourish even where the air is too dirty and smoky to show their colours properly. In such cases, there is only one help, and that is, to bloom under glasses; but of course nothing will preserve them so clear as they would be in the pure open air of an open country. In choosing your collection

to begin with, we can only recommend, as we have done twenty times before, in twenty shapes, the varieties mentioned in the *Garden Almanac*, which we repeat, with one or two additions that have been raised or recognised since. On procuring these, which should come to you well rooted in September or October, or potted, from November to February, they require to be treated according to their then state. If they have been well rooted, and are taken off the plant for you, they require potting, and placing in a cold frame. If they are already potted, they may be placed in the frame at once; but all these matters will be treated of separately. It is only necessary to say here, that the best contrivances for the cultivation of the Carnation and Picotee, are common garden-frames, on a hard bottom, impervious to water. In the first place, then, we must speak of the preparations for culture, which consist in procuring the proper frames and lights, and then preparing a place on which they are to stand. In a general way, we may be allowed to say, that there is not in all the evils with which the florist has to contend, one from

which these plants suffer so much as the damp, which engenders mildew, and, when suffered through a collection, goes well nigh to destroy it. Now the causes of damp are numerous and immediate. Persons fancy they can avoid it, while they are deceiving themselves into a fatal source of mischief. There is but one way—to exclude it altogether; although in many seasons the plants do not require such extreme caution. Among the contrivances to keep the pots and plants dry, or rather, we ought to say, free from damp, we have seen shelves just above the earth, slates covered all over the bottom, tiles, bricks, and such like, forming an excellent dry ground for the pots to stand on; but in all these, there may be a creation of the very evil we endeavour to avoid; on the other hand, we have seen the pots placed on the damp earth, and no kind of mischief ensue. This is very clear, however, that the evil is not so much in what the pots stand on, as in the capacity the bottom has for absorbing the water which is given to the plants, and goes through the bottom of the pots; for when the bottom is sodden with wet, and the



Perfect Petal.



Picotee.



Imperfect Petal.

frame closed, the damp will come up between the slates, or tiles, or bricks, and even the tiles and bricks themselves will absorb enough to keep a frame always damp. In whatever way, therefore, a floor can be best constructed to throw off the wet, that plan should be adopted. Some use a cement ground; some asphalt; some lime and gravel, wetted and levelled; some tiles, or slates, or bricks. Lest, however, it may be found to absorb the wet, it should be made rather sloping, that the water may always run off, and have a few grooves, or gutters, in it for that purpose. On this

floor, the most common shallow garden-frame and light may be placed; and it will form the best, the most unexceptionable, winter protection. The ordinary dimensions of these frames are five feet six, to six feet, from back to front, and each light three feet six wide; so that a three-light box, or frame, would be ten feet six inches from side to side, and five feet six inches, to six feet from back to front. The front should be nine inches high, and the back fifteen. Having provided yourself with such a frame, and a proper bottom, impervious to wet, on which to place it, we may just

observe, that whatever shifts may be made, and however well plants may thrive under other circumstances, there is no certainty in the wintering of Carnations and Picotees, without completely excluding damp ; and this can never be secured, unless the bottom of the frame is impervious to the wet which runs through the pots ; for, be it remembered, the ground, in such case, not only gets more water than the open space, but it cannot dry again, because it is covered with the pots, which prevents the sun and air from reaching it. The very act, therefore, of covering from frost, renders the inside of the frame damp, when the ground in the open air is either frozen or dry. There are those who smile at these precautions : they manage their plants well, without half the trouble, and become heedless, from their success, until some unlucky season mildews every plant they possess ; and they send out stock, perhaps only a little speckled at the time, but which has been so far affected as to be past recovering. Then, and then only, do they begin to consider there is something wrong in what they have done, or omitted to do, and speculate on the means of preventing it for the future. Let not the trouble, then, of forming a dry, hard bottom, be a bar to doing it ; for, when once done, it is done for all times, and all things. Many there are, who think a good thick bed of coal-ashes a good bottom for the pots to stand on ; yet how completely do they absorb and retain the superabundant moisture until they are completely saturated, and retain in themselves the poison for whatever is placed on them, and shut up with them.

THE SOIL FOR THE CARNATION AND PICOTEE.

It is almost impossible to procure a better compost for these plants, than that which is formed by cutting turfs, three inches thick, from a loamy field or meadow, and allowing all the grass and roots to rot together ; and as by looking out for such in time, there are many opportunities of obtaining turfs, there is hardly an excuse for making use of any thing else, after the first year, for the turfs rot well in that time. At the end of the year, these should be cut down perpendicularly, in thin slices, and thrown in a heap to lie together again. During this operation, the bots, or grubs, wire-worms, and all other living things likely to be prejudicial, should be carefully picked out ; for it will often be found that this soil, so highly advantageous to the growth and bloom of the plant, is full of mischief. If the wireworm, or bot, or grub abound, children should be employed to pick them out ; for nothing but picking out and destroying them will do. Before using, this

should all be rubbed through a coarse sieve, or screen, that would let a hazel-nut through ; and all the fibre should be rubbed through with the soil. It requires no more, then, but lying in the heap till wanted for use, save and except that, if you are not perfectly convinced that it is cleared of all kinds of enemies, it should be turned over, and picked once a week, until you are so. The soil, however, in which the Carnations are bloomed, and that in which they are potted in small pots, should be different. In the small pots, you do not want the plants to advance much : the less they are excited all the autumn and winter the better ; they require but healthy, steady progress ; and this can only be secured by clean pure loam, with but little vegetable matter, and no dung. The top-spit of a meadow, with its verdure rotted in it, would be as rich as it would be safe to use ; and they would be little the worse if even that were pared off before the loam was taken. If we were to analyze these two soils, the one from turfs cut only thick enough to secure all the vegetable matter, would be found half loam and half vegetable mould ; cut three inches thick, would give two parts loam, and one vegetable mould ; and that which was formed of the whole spit, with the turf on it, would be found, perhaps, seven and a half loam, and one and a half vegetable mould. But as the latter may often be had easier than the former, it must be made equal to the former by the addition of vegetable mould ; than which nothing is more conducive to the healthy growth of nearly every florist's flower. If it happen, as it sometimes will, that the loam is more adhesive than is desirable, it may be tempered with very clean sand, until it is right ; for the soil should in all cases be sufficiently porous to allow the water to percolate freely ; but not so loose but that a handful, squeezed together, would hold its form ; though, on being pressed in an opposite direction, it should fall to pieces. In preparing to pot the plants for blooming, the soil already mentioned for that purpose should be used in the proportion of three-fourths to one-fourth of cow-dung ; or, in the absence of that, horse-dung, rotted into mould. These should be well mixed together, and will be all the better if prepared some time beforehand. The top spit for potting in small pots needs no other preparation than frequent turning over, after rotting the turf in it, and taking out all the living pests that may be there, and which destroy the plants, if they once attack them. Thus provided with good soil for both purposes, and pots of the small forty-eight size, or the large sixty size, for wintering, and size sixteen or twelve for blooming, the cultivator of Carnations and Picotees may commence

growing them with every prospect of success, by merely attending to the rules which are hereafter laid down, in the proposed treatment for all the seasons of the year. It must, however, be mentioned, that the treatment is intended for weather and climate which is supposed to prevail usually at the season; and may, in some cases, be as wide of the mark as unusual earliness or lateness can make it. Nevertheless, it will be found, in most cases, to provide for difficulties and changes, as well as to simplify the treatment, as much as possible.

MONTHLY OBSERVATIONS AND MANAGEMENT.

JANUARY.—The plants require this month little else than securing for them a free circulation of air; they are in frames, in forty-eight sized pots, one pair in a pot, and, if properly wintered, on a dry bottom, from which the water that runs through the pots can run off. If there be hard frost, they may be covered up, for that can do them no harm, while, if it were severe enough to get through the sides of the pots, the fibres would be injured. Yet the plant is pretty hardy, if planted in the open ground. To secure this circulation of air in perfection, the glasses should be quite opened or taken off, and the frames should not be deep. These plants will stand almost anything but damp, and that is fatal, for it engenders mildew and canker, and the destruction of all the energies of the plant follows as a thing of course. They require very little moisture, but must not be suffered to dry up altogether. If, therefore, the weather is mild, they cannot have too much air, and, if frosty, they should be covered; they must never have the glasses off at night, for there is no dependence on the absence of frost twenty-four hours. The plants out in the open beds may have light litter upon them to keep off frost, but they must not be smothered up too much, and the litter ought to be dry.

FEBRUARY.—There can be no difference made in the treatment from last month, except what the weather enjoins. If it be frosty, the glasses should not be opened, except when the sun temporarily raises the temperature above the freezing point, which it will, in protected places, in the middle of the day. It is as necessary, however, to protect from wet as from frost, and snow is almost poison to them; so that, except the watering given to them to keep a little moisture in the pots, there ought to be no fall allowed to reach the plants. Take off the yellow under-leaves; and if there be a spot on the foliage, or the ends of the leaves beginning to turn yellow and decay, cut off the decaying part down to the sound green leaf; stir the surface of the earth, if it begin to turn mossy; and if any of the pots keep moist while

others are dry, examine the drainage. Now mix up some loam and well-rotted cow-dung. If the loam has the turf rotted in it, and has been formed of turfs cut thick on purpose, two-thirds will be loam, and one-third rotted vegetable matter, and it would require three parts of the loam and one of cow-dung, although the turfy loam alone would grow them well. The mixture should be laid together this month, after being well mixed, and scrupulously examined to see if there be any wire-worm or grub, or bot, and to get them perfectly cleared out. The sun getting more powerful enables one, even if there be frost, to open the frames much longer in the middle of the day, and give air, which is more essential than anything to the well-being of the plants. It is essential, also, to occasionally remove the pots from the frame, and sweep out all the dirt, dead leaves, and brush all the sides of the pots; in short, to clean everything properly, for cleanliness is everything in the culture of this family. If you pick off dead leaves, or cut off any portions of the foliage, by no means let any of the stuff go into the frames, for nothing is more destructive than decaying vegetation. Always keep in mind that a free circulation is the first thing to secure, and the next a clean frame and a dry bottom, although the free circulation will very often counteract the effects of a wet one.

MARCH.—This month is treacherous at all times: biting, cold frosts, heavy falls, drying winds, and storms, are not unfrequent, and all must be provided against as carefully as possible; giving air whenever the weather will permit must be a first consideration; turning over the compost, and hunting for the vermin, is a very necessary duty, and providing for potting into the blooming pots must not be neglected; procure the sizes called sixteens and twelves, the former for pairs and plants, the latter for threes; let them be well baked, and stand level. The treatment of the plants in the frames must be according to the weather—the same as if the same weather were in January or February.

APRIL.—This month you may commence potting the plants in the blooming pots, and you should first provide a large quantity of crocks for drainage: that is to say, broken flower-pots made into still smaller pieces, to fill about two inches of the large pots with, before you put in the compost; then bring plenty of the compost to your potting-table, and a supply of the crocks, and having your plants and the blooming-pots all ready, fill the latter about two inches up with crocks, first covering the holes with pieces large enough to stop the smaller ones from going through; then put on compost, high enough to enable you to place the ball of earth con-

taining the plants at a proper height; now place your fingers on each side the plants in the small pots, and, turning the pot wrong side upwards, strike the edge against the edge of the potting-table or bench, and the ball of earth will leave whole; let the loose crocks of the small pot fall away, but do not use force to remove them, as, if the fibres have got around them, it is far better not to disturb them; placing the ball in the left hand, the upper surface of the soil of the small pot may be removed as far as it can without touching the fibres; then, with both hands, place the ball in the centre of the large pot, pressing it gently down among the new compost, to bring the collar of the plants, which is the base of the lower leaves, within half an inch of the level of the top edge of the pot, then fill up with the compost all round the ball, pressing it gently down, but not pressing the ball out of its place; fill up the pot to the top, and, lifting it level with both hands, strike the bottom gently against the table, to settle it all down; and, making it all level, the pot may be placed in any sheltered spot, under canvass if possible, to keep off heavy falls of rain or hot sun. The hoops or irons used for Tulips are well adapted for this; and if the pots are placed according to their number, so as to form the proper length and width, the irons can be placed over them, and canvass or mats be thrown over or in front at night, or during heavy falls. Continue potting till the whole are done that you mean to do, and if there be any over, plant them in a bed made on purpose with the same compost; or, if not exactly the same, with a good dressing of rotten dung (that is, dung fairly rotted into mould), in the ordinary garden soil: there ought to be three inches in thickness laid on the top, and forked in with about six or eight inches of the garden-mould; they should be planted in rows, so far apart as to enable you to walk between them to layer them—say a foot apart in the rows, and the rows two feet apart; or it is better, perhaps, if ground be not scarce, to plant two rows eighteen inches from each other, and then leave three feet between them and the next two rows, because that gives very good room to operate, and does not waste so much space as if they were in single rows. In planting out, the balls should be planted whole, the same as when potted; and whether there are two plants or three in the pots, the balls should be eighteen inches apart in the row. After potting and planting, gentle watering is necessary to settle the earth about the balls, and they will require but little further care until they begin to shoot up their bloom stems.

MAY.—The potting for bloom, and the bedding out of the plants not potted, should, of course, have been done last month; but if

there be any not yet disposed of, one way or the other, no time should be lost, as from the instant they shoot up the flower stems, or begin to grow up in the small pots, they sadly lose strength, until they are released, and they mostly commence their growth before this month is out. Those in these large pots should be placed on boards, or shelves, standing on feet, placed in pans of water, to prevent earwigs, and other crawling vermin, from getting up the pots to the plant. Refresh them with water when they approach dryness, but do not keep them too wet. The ordinary rain will not hurt them, because you have already secured good drainage by means of the crocks at the bottom. As the plants are very brittle when they begin to rise, the proper carnation sticks ought to be carefully thrust into the pots without damaging the roots, and the end that goes into the soil ought to be pitched all over to prevent its rotting; the sticks should be an inch diameter at bottom, and half an inch at top, tapering all the way from the surface to the top. Glasses are made, and shades also, about a foot in diameter, with a socket in the centre to admit these sticks, and a screw to fix them at any part of the stick, so that whatever height the flower may be, the shade can be adjusted at the actual spot; these sticks are to be put to the plants early, that they may not damage the roots, which soon spread all over the pots if they go on properly.

JUNE.—Sow seed in large pots, rather thinly, the first week, and be careful to water and shade it. As the bloom-stems rise, they must be tied loosely to the sticks, for if tied tightly the stems elongate and bend, and not unfrequently break; the tie ought to be so loose that the stems, as they grow, can push the tie itself up; they require frequent examination and watching, and attention. As soon as the buds are large enough to lay hold of, they must be reduced, in the great majority of cases, to two or three at the most on a stem, to the end that those left on may have all the strength of the plant. There are some exceptions to this, but they are few; the flowers which have short pods, and are too full of petals, may be all the better for leaving on every one of the buds until they have swelled considerably, but we do not recommend the growth of flowers of this description, and experience alone will teach people which varieties are strong enough to bear such treatment; in the mean time the plan of disbudding, as it is called, that is, the reducing of the buds to three on each stem, should be adopted. As the buds swell, they must be tied round the middle with a bit of bass-matting, or coarse worsted, and the tips of the calyx, or case of the bud, may be torn

down to the bass-matting at each division ; it enables the flower to open even instead of its bursting out on one side, and secures a more uniform bloom. As the petals come out, the largest, or what are termed the guard petals, should be brought down to form a lower dish, as it were, for the rest to cover ; to help the laying of them it is usual to place a card on the bud, half way up it, where the tie is ; this card and the bud are held in their respective places by means of a piece of copper wire stuck into the stick, and bent into a round hook, or loop, almost closed at the extremity, in which the stem is put, and the wire bent, so as to keep the card in its place as well as the bud, projecting it generally about four or five inches from the stick. These cards are cut round, and in the centre a circle is drawn, about as large as the largest bud is, say as large as a shilling, then with a sharp knife cut across this circle four times opposite ways, right through the substance, when by pushing a pencil through it, or a taper stick, like a vent peg, it pushes the points out, and they form so many springs to hold the card in its place, even if the wire were not used to put them on the bud : the card is slit from the centre hole to the edge on one side only, the stem is introduced through this slit to the centre hole, and the card is pushed up to the bud, which partly goes into the hole, and is kept there. The lower or large petals, as they open, are brought down on the card to form the outer row, which should be circular. The petals of the next size are brought down one over each place where the others join, and form a second row ; the petals yet rather smaller are to be placed on the joints of the second row, and so form a third ; when all that can be placed in rows are adjusted, the remaining ones, if any, should be placed in the centre, upright, to form a crown ; but if there be a petal, all of a colour, or without any colour, or if there be any in a bizarre which has only one colour,—all bizarres ought to have two,—they should be pulled out, for any one of them would disqualify a flower, and in showing, cast it out. These instructions more particularly belong to July, but, as in many seasons the flowers come in June, it is necessarily placed in this month. Attend to the watering, for while plants are growing and blooming, they require a good deal of moisture.

JULY.—Stir the earth between the seedlings, and as soon as they are large enough to hold, thin them out to two inches apart, pricking in the young seedlings taken away into other pots. Having given the treatment for the two months nearly complete in one, there remains little else than repetition. But

all the small shoots that are not likely to be long enough for layering, should be taken off and struck like the pipings of pinks, under a hand glass, on a little mild bottom heat. They make excellent plants in general, though they do not make so much increase. The pipings only require about three joints of a shoot, for so that there is a sound stem, the shorter they are the better. This month you may begin layering—an operation which is thus performed :—Cut off the leaves pretty close to the stem of all the shoots that are long enough to lay down under the surface, all but the top three joints, then make an incision in the stem, on the under side, half way between the second and third joints, under the lower leaves left on, and to nearly the middle of the stem, bearing the knife upwards, right through the second joint, and cut off at the joint the sloping piece below it ; the place to peg it down on must be dug up, or loosened with the knife, and a little sand should be mixed, and with a peg made like a little hooked walking stick, four inches long, peg down the layer, so that the whole of the slit part is under the surface, which must be filled up level ; and all the shoots are to go through the same process. The pegs for this purpose may be made of birch, which is full of these hooks, or of fern leaves, which are, perhaps, better. After doing them, give water to settle the earth about them, and leave them to their fate.

AUGUST.—Complete the layering of the whole stock as soon as possible, and attend constantly until they have all struck. If any bloom has been finer than usual, and you desire seed, take out the decayed petals, that the pod may swell and ripen without rotting. Save seed only from those with thick smooth petals, good clear white, tolerably full flowers, and smooth edges. Water the seedlings frequently in dry weather, and let them have all the air, as well as gentle showers, when there are such ; on no account must they be deprived of air : when the sun is too hot put them in the shade, and this month they may be removed to a shady border, well protected from slugs and other vermin, there to gain strength for potting out in their winter pots.

SEPTEMBER.—Continue watering the layered plants, and occasionally examine the seed-pods, for when they turn yellow they may be gathered to lay by in dry paper bags. The stems may be cut down, and the sticks carefully withdrawn, for the fibres of the old plant will generally be found matted round the pitched stick, and if they were violently drawn out, they would, in some instances, bring the plant out with them, and disturb all the layers. You may now prepare small pots (size 60 for one plant, and 48-size for two),

and plenty of crocks for draining, with clean loam without any mixture of dung, and have it well examined for wire-worm, grubs, &c. all the month, for if this be not done, a good deal of the stock would suffer from the presence of a very few of these pests. You will thus be prepared for potting off both layers and seedlings. It would be worth providing temporary covering for the seedlings during the night, in case of frost, which would hurt them, though it could not much affect the layers in old plants.

OCTOBER.—Now commence potting the seedlings, two in a 48-sized pot, or one in a 60, but the former is better; put about two inches of crocks in the bottom, and fill up to two-thirds with the loam, raising up the seedlings with a tuft of roots and mould at the bottom; place them even in the pot, so as to bring the collar just even with the surface, and a little below the edge; press them but little, and knock the bottom of the pots against the table or potting-bench, to shake down the earth: give them a gentle watering, and put them all in a frame with a glass to cover them when necessary. Examine the layers to see if they are rooted, before you disturb them, though there will be very few, if any, that have not struck out a good bunch of fibres before this time. The way to examine them is to scrape the earth from the stem where it dips into the soil, next the old plant, to the peg, and remove the peg gently; cut off the stem from the old plant clean up to the joint, that is, even with the struck half, and by this the bottom of the plant becomes a fork, one prong of which has struck root and the other not, but it soon strikes in the winter pot. This, however, leads us to a favourite mode of preparing for the layering, by stopping the slit we make when we come to the joint, instead of bringing the knife right through the joint. In this case we have nothing to do but to cut the stem off as close as we can, and the bottom is solid instead of split; they will do either way, but when the stem is not split above the joint, they more frequently break while pegging down, because they are not so pliable, and the knife will sometimes go through while cutting off the piece below the joint, because we can put nothing in the slit to stop it. These layers are to be potted the same way as the seedlings, and in the same stuff; they are then to be watered and put into frames, and be shut down for a day or so.

NOVEMBER.—The winter quarters must now be prepared. A hard bottom, impervious to water, and lying sufficiently sloping to allow the water to run off, is necessary; upon this place the frames and glasses, and first seeing them well brushed inside, to clear away any vermin or eggs of vermin, the pots may be

regularly stood, side by side, nearly close to each other; and from this time be protected by the glasses from heavy rains, frost, snow, and strong east winds. It will be impossible to give too much air in open weather, for, as we shall repeatedly impress upon the grower's mind, a free circulation of air is more essential to this plant than almost any other consideration: the want of this will allow damp to settle on the plants, and mildew and destruction follow rapidly. The seedlings, in some instances, will be more tender than the old plants, and, perhaps, require rather more precaution against cold winds and frost, because they will continue to grow when the others do not. However, a little frost will not hurt either, though settled damp would prove highly injurious.

DECEMBER.—The treatment this month is only to be a continuation of that for last; and all the winter we are only able to direct conditionally, for there is no more security against frost in October, November, or December, than in January, February, or March, nor is there any more likelihood of it. We have always to be prepared for sudden emergency; but the only thing that we have to fear, as permanently injurious, is settled damp; this chiefly, if not invariably, arises from the want of a proper circulation of air, for even wet, soppy ground, which we, above all other evils, would avoid, has been known not to prove injurious when the free circulation of air has been secured.

LIST OF CARNATIONS RECOMMENDED.

Scarlet Bizarres.

TWITCHET'S DON JOHN.—Fair pod, very double, smooth edge, form above the average, white fair, marking first-rate, colour striking, petals apt to curl, size average.

HEADLEY'S ACHILLES.—Pod good, not very double, edge smooth, average form, white not pure, colours vivid and often rather too much of them, petals stiff, size average.

STRONG'S DUKE OF YORK.—Pod good, very double flower, marking good, colour bright, white fair, petals stiff, edges smooth, often hardly colour enough, size large.

COLCUT'S BRUTUS.—Pod good, not very double, crown sometimes deficient, form good, petals stiff and well marked, size average.

RAINFORTH'S GAME-BOY.—Pod good, edges occasionally serrated, thin flower, marking good, petals stiff, and general form not high up enough in the crown, size rather under average.

SMITH'S DUKE OF WELLINGTON.—Pod good, very double, smooth edge, form good, white fair, marking rather broken, colour middling, petals, fair stiff, size large.

MARTIN'S SPLENDID.—Pod good, habit of stem short, form first-rate, marking good,

colour fine, petals firm, slightly cupped and smooth at the edges, size average.

LODGE'S TRUE BRITON.—Pod good, flower double, edge smooth, form good, white fair, marking rather broken, colour pretty good, petals firm, size large.

ROI DE CAPUCINS.—Pod good, flower double, edge serrated more than many, general form good, petals average, white apt to flush, colour very bright, marking good, flower large.

BUCKNALL'S EARL FITZHARDINGE.—Pod good, double, smooth-edged, form good, white good, marking good, colours bright, petals firm, size average.

ELY'S LORD POLLINGTON.—Pod good, flower double, form good, petals flat and stiff, edge pretty smooth, marking good, white fair, colours bright, size large, habit of stem short.

SHARPE'S DEFIANCE.—Pod good, form good, double, edges smooth, marking good but occasionally deficient of bizarre, white fair, colours striking, petals stiff, size average.

ELLIOTT'S DUKE OF SUTHERLAND.—Pod good, form good, flower double, petals firm, size small, colour good.

FLETCHER'S DUKE OF DEVONSHIRE.—Pod good, form average, difficult to fill up the centre of more than one flower to a plant, colour good, edge smooth, size small.

HALE'S PRINCE ALBERT.—Pod good; must be shown in the young state, as the colours fade and the petals get long as the flower gets matured; form good while the petals are in the young state, colours splendid at first, marking good, white middling, size large.

APPLEBY'S PRINCE OF WALES.—Pod good; colour vivid, but too much of it, white deficient, and flowers apt to run; size average, edge middling.

HEPWORTH'S HAMLET.—Striking bizarre; not sufficiently proved, but very fine shown as a seedling.

FIRE-KING.—Colour vivid, and plenty of it, marking good, form average, edges middling, and so far as is yet known, it is a fine flower, though not proved yet.

Crimson or Pink and Purple Bizarres.

ELY'S LORD MILTON.—Crimson, pod fair, just double enough, well marked, form good, edge smooth, white a little uncertain, but generally good; petals good substance, colour brilliant, size average.

ELY'S DUKE OF BEDFORD.—Crimson, pod good, double, well marked, form good, edge comparatively smooth, petals thin and rather loose, white good, colour brilliant, size large.

MANSLEY'S ROBERT BURNS.—Crimson, pod rather short, double, well marked, form good, edge smooth, petals fair substance, white good, colour middling, size large.

SEALEY'S PRINCESS ROYAL.—Pink and purple, pod large, very double, form good, petals thick and smooth-edged, white generally good, colour not very brilliant, but rich, apt to have many small run petals, size large.

PUXLEY'S PRINCE ALBERT.—Crimson, pod large and good, very double, form good, edge smooth, petals firm and good texture, marking broad and good, white good, colour brilliant, size large.

WAKEFIELD'S PAUL PRY.—Crimson, pod good, double, form good, edge smooth, petals good substance, white good, marking very narrow, bright colour, size average.

BARNARD'S DUKE OF ROXBURGH.—Crimson, pod good, double, form good, edge smooth, petals good substance, white good, marking occasionally faulty, deficient of the second colour, but colour bright, size very large.

ELY'S HUGO MEYNELL.—Crimson, pod good, double, form good, marking good, bright colour, size average.

CHAMBERS' KATE.—Crimson, pod good, form good, edge smooth, petals smooth and good texture, colour bright, marking occasionally confused, size large.

HOLMES' COUNT PAULINI.—So like Paul Pry, that it would be dangerous to put both in the same stand.

STRONG'S LINNÆUS.—Pink and purple, pod good, form good, petals thick and smooth, white good, marking middling, double, edges smooth, size large.

CARTWRIGHT'S RAINBOW.—Crimson, pod good, form good, edge mostly serrated, but occasionally fine; petals thick, marking good, white good, double, colours brilliant, size large.

JACQUES' GEORGIANA.—Crimson, pod good, form good, white good, marking very fine, colour brilliant, just double enough, petals firm and good, edge smooth, size average.

VENABLES' SPITFIRE.—High-coloured crimson, pod good, flower double, form good, white apt to flush, colour very brilliant, edges inclined to be serrated, marking good, size average.

Purple Flakes.

ELY'S JOHN WRIGHT.—Pod good, form good, double, white good, colour bright, marking good, edges smooth, petals firm, size large, very like Turner's Princess Charlotte.

ELY'S MANGO.—Pod good, form good for so thin a flower—not so double as we like, white good, colour bright, marking excellent, edges smooth, petals firm, size rather small, blooms almost too early, size rather below average.

MANSLEY'S BEAUTY OF WOODHOUSE.—Pod good, very double, white good, colour bright, marking broad and good, petals firm, edges smooth, size large.

MANSLEY'S BONNY BESS.—Pod good, form good, double, white good, colour fair, marking good, petals firm, edges smooth, size large.

NIX'S LADY CHETWYNDE.—Pod good, form good, double, white fair, colour dark, marking good, petals firm, edges smooth, size average.

MILWOOD'S PREMIER.—Pod good, form good, double, white good, colour light, marking very good, petals firm, edges smooth, size average.

MARTIN'S PRESIDENT.—Pod good, form good, double, white good, colour dark, marking fine, petals firm, edges smooth, size large.

WILMER'S SOLANDER.—Pod good, form middling, double, white good, colour light purple, marking rather confused, petals thin and apt to curl, edges smooth, size large.

CHRISTIAN'S EXCELLENT.—Pod good, form good, double, white good, colour bright, marking good, petals firm and smooth, edges smooth, size average.

STRONG'S ESTHER.—Pod good, form good, double, white fair, colour dark, marking good, petals firm and smooth, edges smooth, size large.

POLLARD'S FIRST-RATE.—Pod good, form doubtful, petals large, smooth edge, does not always make a good form, rather loose centre, white good, marking good, size large.

BRAEBIN'S SQUIRE MEYNELL.—Pod good, form good, double, white good, colour brilliant, marking fine, petals firm, and edges smooth, size large.

PRINCE DE NASSAU.—Pod good, form good, double, white fine, colour light purple, and not too much of it, marking good, petals rather thin and occasionally serrated, size average.

TURNER'S PRINCESS CHARLOTTE.—Pod good, form good, flower double, white good, colour bright, marking good, edges smooth, petals firm, size large. Is this the same flower as Ely's John Wright, or is it only very like it?

Scarlet Flakes.

SIMPSON'S MARQUIS OF GRANBY.—Pod good, form fairish, flower double, white rather flushed, colour fair, marking uncertain, petals firm, edges smooth, size large.

TWITCHET'S QUEEN OF SCARLETS.—Pod good, form good, double, white good, colour bright, marking good, petals firm, edges smooth, size average.

CHADWICK'S BRILLIANT, *alias* JONES'S BRILLIANT.—Pod good, form good, white fair, colour bright, marking fine, petals firm, edges occasionally serrated, size average.

BUCKNELL'S ULYSSES.—Pod good, form good, white fair, double, colour bright, marking good, petals firm, edges occasionally serrated, size average.

WIGG'S EARL OF LEICESTER.—Pod good, form good, double, white fair, colour rather

dull, marking good, petals firm, edges smooth, size average, a later bloomer than most of them.

BROWN'S BISHOP OF GLOUCESTER.—Pod good, form good, double, white rather flushed, colour fair, marking uncertain, but occasionally good, petals firm, edges smooth, size under average.

ELY'S NORTH MIDLAND.—Pod good, form good, double, white middling, colour rather dull, marking fair, petals firm, edges smooth, size average.

MITCHELL'S PATRIOT.—Pod rather short, form good, double, white middling, colour rather dull, marking good, petals firm, edges smooth, size large.

WILMER'S HERO OF MIDDLESEX.—Pod good, form good, double, white middling, colour good, marking good, petals middling firm, edges smooth, size large. Is this a run flower from the Conquering Hero?

GREASLEY'S MARY ANNE.—Pod good, will make up a good form, but quarters of itself; double, white fair, colour middling, marking pretty good, petals smooth and firm, size average.

WILSON'S WILLIAM IV.—Pod rather short, form good, double, white middling, colour very bright, marking good, petals firm, edges smooth, size large.

ADDENBROOK'S LYDIA.—Pod good, form good, double, white middling, colour bright, marking good, petals firm, edges smooth, size large.

OLDHAM'S DEFIANCE.—Pod good, form good, double, white middling, colour bright, marking good, petals firm, edges occasionally serrated, size large.

HEPWORTH'S CLAUDIANA.—A flower not yet proved in the neighbourhood of London, but esteemed and successful in the North.

Rose Flakes.

BROOK'S FLORA'S GARLAND.—Pod good, form good, double, white occasionally washy, colour rather dull, marking rather broken, petals firm but thin, edges smoothish, size large. This flower has more faults than most others, and yet, upon the whole, it is one of the best Rose Flakes.

ELY'S LADY ELY.—Pod good, form good, double, white good, colour bright, marking good, petals rather loose, edges smooth, size average.

ELY'S LOVELY ANN.—Pod good, form good, double, white good, colour bright, marking fine, petals firm, edges smooth, size average.

GREASLEY'S VILLAGE MAID.—Pod good, form good, double, white good, colour light rose, marking good, petals firm, edges smooth, size average.

IRON'S QUEEN VICTORIA.—Pod good, form

good, double, white fair, colour middling, marking faulty, petals firm, edges apt to be serrated, size average.

TOMLYNE'S BRISEIS.—Pod good, form middling, centre rather faulty, double, white good, very high colour, marking good, petals firm, edges smooth, size large.

IRON'S DEFIANCE.—Pod good, form good, double, white good, colour good, marking fine, petals firm, edges smooth, size large.

WOOD'S ROSABELLA.—Pod middling, form good, white fair, double, colour bright, marking fine, petals firm, edges smooth, size average.

WILSON'S HARRIET.—Pod good, form good, double, white good, colour washy and poor, marking middling, petals not first-rate, edges smooth, size large.

BARRENGER'S APOLLO.—Pod good, form good, double, white good, colour striking, marking good, petals smooth-edged and firm, size average.

FLETCHER'S DUCHESS OF DEVONSHIRE.—Pod good, form good, double, white middling, colour rather dull, marking good, petals rather flimsy, edges occasionally rather serrated, size average.

LOWE'S MARCHIONESS OF WESTMINSTER.—Pod good, form good, double, white good, colour dense, marking good, petals firm, edges smooth, size large.

ELLIOTT'S DUCHESS OF SUTHERLAND.—Pod good, form good, double, white good, colour good, marking fine, petals firm and smooth edged, size average.

HUFTON'S ROSEA.—Pod good, form when made up good, but naturally quarters, double, white good, colour rather poor, marking good, petals firm, edges smooth, size average.

LIST OF PICOTEEES RECOMMENDED.

BARRAUD'S CORNELIUS.—A broad or heavy red-edged variety.

SHARPE'S DUKE OF WELLINGTON.—A broad or heavy red-edged variety.

SHARPE'S GEM.—A light or narrow red-edged variety.

SHARPE'S RED ROVER.—A broad or heavy red-edged variety.

WILDMAN'S ISABELLA.—A broad or heavy red-edged variety.

HEADLEY'S SARAH.—A light or narrow red-edged variety.

BRINKLOW'S RISING SUN.—A broad or heavy red-edged variety.

SHARPE'S COUNTESS DE GREY.—A light and narrow red-edged variety.

KIRTLAND'S DUKE OF WELLINGTON.—A light or narrow red-edged variety.

SHARPE'S HECTOR.—A light or narrow red-edged variety.

JESSOP'S SIR WILLIAM MIDDLETON.—A heavy or broad red-edged variety.

BURROUGHS' MRS. BEVAN.—A light or narrow red-edged variety.

HEADLEY'S NANNETTE.—A heavy purple-edged variety.

BRINKLOW'S PERFECTION.—A light purple-edged variety.

BRINKLOW'S LADY CHESTERFIELD.—A light purple-edged variety.

DICKSON'S TRIP TO CAMBRIDGE.—A heavy purple-edged variety.

GIDDIN'S VESPASIAN.—A light purple-edged variety.

ELY'S FIELD MARSHAL.—A heavy purple-edged variety.

ELY'S MRS. FENTON.—A light purple-edged variety.

ELY'S FAVOURITE.—A heavy purple-edged variety.

KIRTLAND'S PRINCESS AUGUSTA OF CAMBRIDGE.—A heavy purple-edged variety.

JOHN'S PRINCE ALBERT.—A light purple-edged variety.

BARRAUD'S CORIOLANUS.—A heavy purple-edged variety.

MANSLEY'S (OR MITCHELL'S) NULLI SECUNDUS.—A heavy purple-edged variety.

SHARPE'S INVINCIBLE.—A heavy purple-edged variety.

SHARPE'S AGITATION.—A heavy purple-edged variety.

WILDMAN'S PRINCE ROYAL.—A heavy purple-edged variety.

HEPWORTH'S EMILY.—(New) purple-edged variety.

MATHEW'S ENCHANTRESS.—A light purple-edged variety.

BARNARD'S MRS. BARNARD.—A light bright rose-edge, very narrow.

BARRAUD'S BRIDE.—A light bright rose-edge.

GREEN'S QUEEN VICTORIA.—A broad light bright rose-edge.

KIRTLAND'S MRS. ANNESLEY.—A broad light bright rose-edge.

TWITCHET'S FAIR ROSAMOND.—A broad light bright rose-edge.

WILSON'S MISS FANNY IRBY.—A broad light bright rose-edge.

WAIN'S QUEEN VICTORIA.—A light bright rose-edge.

GARRATT'S LADY DACRE.—A light bright rose-edge.

MATHEWS' NE PLUS ULTRA.—A red light-edged variety.

There would be in a great majority of these Picotees such a sameness of description that beyond the colour and the distinction of light and heavy marking, there would be little that is interesting. They are selected as the best show flowers, which in their way have made as large an advance towards the standard as we can boast in the present day. They

are chosen for their thickness of petal, smoothness of edge, and goodness of form, but they are a long way from perfection; we should grow every one of them if we were going to exhibit, for although their faults are many, they are the best of their several classes.

PROPERTIES OF THE CARNATION.

The flower should be not less than two and a half inches across.

The guard or lower petals, not less than six in number, must be broad, thick, and smooth on the outside, free from notch or serrature, and lap over each other sufficiently to form a circular roscate flower, the more round the outline the better.

Each row of petals should be smaller than the row immediately under it; there should not be less than five or six rows of petals laid regularly, and the flower should rise and form a good bold centre or erown; and in quantity should form half a ball.

The petals should be stiff and slightly cupped.

The ground should be pure snow-white, without specks of colour.

The stripes of colour should be clear and distinct, not running into one another, nor confused, but dense, smooth at the edges of the stripes, and well defined.

The colours must be bright and clear, whatever they may be; if there be two colours, the darker one cannot be too dark, or form too strong a contrast with the lighter. With scarlet the perfection would be a black; with pink there cannot be too deep a crimson; with lilac, or light purple, the second colour cannot be too dark a purple.

If the colours run into the white and tinge it, or the white is not pure, the fault is very great, and pouncey spots or specks are highly objectionable.

The pod of the bloom should be long and large, to enable the flower to bloom without bursting it; but this is rare, they generally require to be tied about half way, and the upper part of the calyx opened down to the tie of each division; yet there are some which scarcely require any assistance, and this is a very estimable quality.

THE PROPERTIES OF THE PICOTEE.

The properties of form are similar to those of the carnation; but the distinction between carnations and picotees is, that the colour of the former is disposed in unequal stripes, going from the centre to the outer edges, and that of the picotees is disposed on the outer edges of the petals, and radiates inwards, and the more uniform this is disposed the better.

Whether it be very deeply feathered at the edge, like the pattern on the edge of a heavy feathered tulip, or an even stripe not wider than the thickness of the petal, all round the edge, or something between, it is only necessary that it be uniform; that none of the feathery marks have a break, and that there shall be as much width of white as colour seen on the petal at the deepest part of the feather. It is not necessary that the feather be the same width all the way round, but every stripe which does not reach the edge of the petal is a blemish.

DISQUALIFICATIONS OF BLOOM.

If there be any petal dead or mutilated.

If there be any one petal in which there is no colour.

If there be any one petal in which there is no white.

If a pod be split down to the sub-calyx.

If a guard petal be badly split.

Notched edges are glaring faults, for which no excellence in other respects compensates.

TYING THE PODS.—This is usually done with bass-matting, but many use coarse worsted, which is considered better on account of its elasticity. There is, however, a material preferred by many, though of recent invention—small bands of india-rubber, which has been of late used with great success, and is well spoken of by those who have applied them. It is quite necessary that they should be strong enough to resist a tolerable pressure, or they would not prevent the pod of a full flower from splitting; the tearing down of the calyx as low as the tie will, however, so equalize the pressure from within, and give room for the petals to expand early, that the resistance to the tie is greatly lessened; and many of the best varieties will, if the calyx be carefully torn down all sides alike half way down the flower, bloom even without a tie.

SERRATED EDGES.—However smooth we may find the edges of Picotees and Carnations, they will occasionally come serrated; and it has puzzled many florists to account for this change from season to season, for it frequently affects the same variety at many different localities. So marked is the difference between a flower of one season and the same flower another season, that, except to those who study every minutiae, it would hardly be taken for the same kind. Such is the disposition to go back to the serrated edges, that, on sowing seeds from smooth-edged flowers, the greater part of the produce will come notched on the edge; but this is not half so singular as the same variety that usually comes smooth coming rough in particular seasons.

THIN FLOWERS.—The Northern growers have for many years shown flowers with two rows of petals, and a couple of petals stuck up in the middle, back to back, for a crown. This has arisen out of the mode of judging, in which any ugly or defective petal counts against the flower, so that petal after petal is pulled out until the least quantity allowed is left. But this led to the saving of flowers naturally thin, for it happens that some double flowers, in Pinks, Picotees, and Carnations, are very often more regularly and more beautifully marked than the more full and double ones are. Nevertheless, the standards put out of late years have gradually improved the tastes of the cultivators all over the country; and, although it will take time to bring it uniform and correct, every year advances the quality of the varieties considered fit to send out as new ones, while the thin flowers, being rejected by the majority of exhibitors, find little or no encouragement.

CARNATION SHOWS.—The season of 1846 has been one of the most remarkable that has occurred for more than forty years. Never

has it happened in the recollection of the oldest florists, that Carnations and Picotees were in flower on the 24th June; yet, even at Marlow, on the 23d, there were stands exhibited. The ordinary season, for twenty miles all round London, is the 20th of July; indeed, it used to be considered that the 20th of April for Auriculas, the 20th May for Tulips, 20th of June for Pinks, and the 20th July for Carnations, were the best, and all societies endeavoured to fix their days of show as nearly as they could to those days: 1846 will be memorable for being one month earlier; and the Pink shows all round the Metropolis have produced little other than small lateral blooms, while Carnations and Picotees were in high order. But the flowers of all have been comparatively diminutive; four or five weeks of burning sun, gave no opportunity of growing to perfection of size. There was scarcely a day's really growing weather for a month, and the result was inevitable—flowers, with few exceptions, only reached half their proper size, the best exhibitions were but middling, and some very inferior.

GARDENING CALENDAR FOR AUGUST.

THE CONSERVATORY.

AUGUST is generally a hot month, and while this is the case, conservatories require good ventilation, and a continuation of the shading provided during former months. The latter, however, must not be too freely indulged in, or the maturation of the shoots will be prevented or retarded. By this time of the year most of the plants will have made their growth, and it should now be the principal aim to get that growth well matured; the treatment which is most conducive to this end, is to gradually reduce the supply of moisture to the roots, and also, as far as possible, that contained in the atmosphere; to discontinue—gradually likewise—the shading which has been employed, and to allow the ventilation to be as free and perfect as may be compatible with the welfare of such plants in bloom as can be obtained for decorative purposes.

Watering.—The permanent plants must now be less liberally watered, and they should, if possible, by the gradual withholding of water, be brought to a state of rest, as they will have to submit to some degree of excitement in winter, when the house is kept rather warmer than ordinary for the sake of the forced flowers which are brought into it. Plants in pots require to be regularly sup-

plied, and the quantity will yet hardly bear to be reduced. Those in bloom always require rather over than under an average supply for the season of the year. When, however, there may happen to be stove plants amongst them, these will require rather less than usual, in a low temperature. Syringing will not be required, except for a plant occasionally here and there. It is preferable during this month to commence the practice of watering only in the morning.

Autumn Flowers.—Look well to the plants of different kinds intended to produce blooms through the autumn and winter, and see that they are kept in a growing state. Chrysanthemums, Cinerarias, Pelargoniums, Salvias, Heliotropes, and plants of this habit, should have their roots attended to, and if they require it they should get a shift; but it is advisable not to grow them on too freely, as this would rather check their flowering. The Pelargoniums, Salvias, and Heliotropes, during all the earlier stages of their growth, should have their young shoots frequently stopped, so as to induce nice bushy plants, which then produce plenty of flowers. By this time the stopping of them must be discontinued, and the plants should get less water, so as to be matured and rested before they are required

to develop their flowers. *Chrysanthemums* should be rather limited in their growth, or they will get too luxuriant, and not flower freely. *Cinerarias* should be potted rather more liberally, and grown on freely; the larger they are grown, the more blooms are produced, and, consequently, the more showy are the plants.

Sweet-scented Plants.—Look after these, and see that they are being properly prepared for starting soon into growth: they should now be resting—kept rather dry, and placed in a cool situation. Sweet-briar, *Aloysia citriodora* (the lemon-scented verbena); several *Pelargoniums*, as the rose-scented, lemon-scented, nutmeg-scented, &c.—the Prince of Orange is a favourite variety; China Roses, *Heliotropes*, &c., are the class of plants referred to. *Mignonette* and the *Mimulus moschata* (musk-plant) require different management, and may both be kept growing in pits, the former being obtained from seeds, and the latter from cuttings.

Gesnera oblongata.—Remove the plants to a warm house, in order to get them sooner into flower; they should be taken in in rotation.

Achimenes.—Cuttings of some of these plants, if rooted carefully in a warm atmosphere, make neat late flowering plants, and come in useful. Shift the plants of *A. picta*, and its allies *Gesnera zebrina*, and *G. Gerardiana*; these are all magnificent plants for autumn flowering.

Begonias.—Some of these will be suitable for decorating the conservatory, and may be removed for that purpose from other structures. Place them in a warm sheltered position.

Bulbs.—Look out for the earliest supplies of Dutch bulbs, for potting; and get those potted which are intended for forcing as early as possible. It is a mistaken notion to delay the purchasing and planting of these: early purchasers secure the best roots, and early planting secures the best plants and flowers, provided the treatment is proper.

Climbers.—Where the roof of the conservatory is tolerably close, the upper part of the house will be rather warm; this affords an excellent situation for some of the intermediate class of climbers, which require rather more than green-house temperature, while the hardier plants do better if confined rather more to the lower and cooler parts of the house. Of the former class, some of the best are the following:—*Mandevilla suaveolens*, *Stephanotis floribunda*, and *Schubertia graveolens*, which have white flowers, and are powerfully and agreeably scented, especially the two first. *Passiflora kermesina*, with crimson flowers, is also a suitable plant; and

so are various other *Passifloras*. For the lower part of the house the *Kennedys*, *Zichyas*, *Hardenbergias*, *Physolobiums*, *Sollyas*, and the *Marianthus* are suitable. *Marianthus cœruleopunctatus* has light blue flowers; *Sollya linearis*, blue; *Hardenbergia macrophylla* and *Comptoniana*, purple; *Physolobium carinatum*, *Zichya coccinea* and *inophylla*, and *Kennedy prostrata*, are various shades of scarlet and red; and the flowers of *Kennedy nigricans* are dark—nearly black. These climbers succeed best when planted out in the spring.

Japan Lilies will come into bloom during this month. Probably something could be done worth the attempt, in the way of hybridizing these. Where it is attempted, the earliest flowers should be operated on, and the other flowers removed to throw energy into the seed. An intermixture with the scarlet or orange coloured kinds would probably bring something good. These are named as conservatory plants because of their grand effect when so treated; they are, however, quite as hardy as other lilies.

THE GREEN-HOUSE.

At this season of the year the general principle of maturing, rather than of exciting, growth, should be acted on, for on this will depend much of the success of blooming the plants at the proper season. This applies especially to all such plants as flower in the spring or summer, and whose fresh growth of branches, after blooming, is now almost, or entirely, completed. One main feature of this maturing process, lies in somewhat limiting the supply of water. Plants which are coming into bloom, or which have yet fresh growth to make, should be regularly watered as heretofore; but, as a general principle, towards the end of the month the autumnal limitation of moisture should be commenced. None of the green-houses need be occupied with their ordinary inmates yet, if the more delicate of the plants are sheltered in pits; and the houses can be turned to account in the growth of tender annuals and stove plants. The more hardy of the green-house plants may be kept out of doors till the end of next month: the more delicate ones, and succulents, and other plants impatient of moisture, should be protected from autumnal rains, either by placing them in the green-house or in pits, or erecting an awning over them; if either of the two former modes of protection is adopted, very free ventilation should be allowed.

HOUSE FOR MISCELLANEOUS PLANTS.—As regards temperature, ventilation, and other atmospheric conditions, this, as well as the other green-houses, will have to be regulated just according to the class of plants which are

placed in them. If the house is filled with tender annuals and stove plants, a moist and comparatively close atmosphere must be kept up, by frequently syringing at morning and evening, giving smaller quantities of air through the day, and shutting up close early in the afternoon, syringing at the same time. If, on the other hand, any of the green-house plants are placed here for shelter, or the house is filled with young stock of any kinds of green-house or half hardy plants, which is sometimes the case when pit room is scarce, then full ventilation must be permitted, both day and night: when employed for rearing young stock, it is more necessary to have recourse to, and continue the practice of, shading, than for more mature plants of any kind; but if the days are very hot and bright, most kinds of green-house plants are the better for a slight shading in the hottest part of the day.

Primulas.—Sow a few during this month, to provide a succession of plants, and treat them in every respect as recommended at p. 290. When there are any old plants saved from last season, let them be potted now, and placed in a frame, or in the green-house at once: though blooming less finely than young plants, they generally come into bloom earlier, unless a few had been sown very early.

Annuals.—Some few of the annuals which are worth growing to bloom during the winter, should be sown now in pots or boxes, and may be kept in the frames till the end of next month, when they should be removed to the shelves near the glass in the green-house. Two or three kinds of *Schizanthus*, intermediate Stock, *Mignonette*, *Brachycome*, *Erysimum*, and *Nemophila*, may form part of this sowing; the selection should by no means be extended promiscuously, or even very much extended at all.

Coronillas, and such other half-shrubby plants as have been provided for winter flowering, including *Salvias*, *Heliotropes*, *Geraniums*, *Shrubby Calceolarias*, *Cinerarias*, &c., should still have all the flower-buds that may be produced removed, in order to throw all their energy into the plant, to enable it to flower more vigorously and profusely later in the season, when actually required. The earliest ones need not again be repotted, if it was done late in the last month, and they received a liberal shift; if otherwise, and also in the case of later plants for succession, the proper shifting of each batch, and forwarding them a stage, must not be neglected.

Kalosanthes.—Two sets of plants of this fine thing should always be grown, so that, individually, the plants may form strong shoots and get them well matured one year, and produce flowers the following one. Those that

have been making growth should receive a change of treatment to induce them to mature and ripen that growth previous to the approach of winter. Those that have been flowering should be cut back and set in a cool place, with scarcely any water till they recommence growing, when they may be put into smaller pots, in rather sandy soil of a loamy basis. Some of the shoots may be planted as cuttings and will require no water, or scarcely any, until they are rooted.

Chrysanthemums.—These plants will now be advancing considerably, and will require good attention. Let them be occasionally repotted, according to the size of the pots to which they may be limited, and the size the plants are required to be of, when arrived at a blooming state. Keep them regularly and thoroughly watered, sometimes using manure water, or their foliage will exhibit manifest evidence of neglect, by that at the lower part of the stem turning yellow, or falling off. Stop the very strong shoots for bushy plants, but it must not be continued any later. Small plants, a few inches high, though they produce much smaller blooms than the stronger plants, are, nevertheless, very pretty; there are two ways of obtaining them—either lay the points of the blooming shoots, during the latter part of the month, into small pots, and remove them when rooted, giving them one shift; or take off the tops, as cuttings, earlier in the month, and root them in a close but very mild hotbed. In either case, the plants, when sufficiently rooted, are treated like established plants.

Ipomæas.—Any of the species which do in a green-house, if sown now, and kept in small pots on a dry shelf in the green-house, during the winter, will bloom much more certainly next season than if sown in spring. The same, as a principle, applies to many other plants, too numerous to mention here.

Thunbergias.—A good stock of these plants—of each variety, especially *alata alba* and *aurantiaca*—should be sown now, in a rich light loam, and potted into small pots, and stored by on a dry shelf at a warm end of a green-house. They will become established plants by the spring, and will bloom early.

Rhodanthe Manglesii.—Though growing out of doors in favourable situations, in summer, this beautiful little annual plant can only be properly regarded as a green-house plant, for there only, in our changeable climate, can we ensure full development. The seeds should be sown now, and the plants kept all winter, in small pots, on dry airy shelves in the green-house. A sandy, somewhat peaty, soil suits them.

Bulbs.—The Dutch bulbs, such as *Hya-cinths*, *Narcissus*, *Jonquils*, *Tulips*, &c. cannot be dispensed with, where flowers in winter are any object. The great fault as respects these

is, the purchasing of them late in the autumn. For early flowering, especially, they should be selected this month, if possible, or if not, early in the next, and be potted and plunged in some cool place, beneath five or six inches of coal ashes, old tan, or some such material. The object of this is to set them growing at the root; in fact, to have the roots pretty fully developed before the leaves are excited, the reverse of which happens when they are potted, and at once, or nearly so, removed to the forcing house.

Cape Bulbs, as *Ixias*, *Lachenalias*, *Oxalis*, &c. may be potted and placed in a cold frame, to be removed, subsequently, to the green-house; they will grow in a mixture of half loam and half peat, both in a turfy state, intermixed with sand.

HEATH HOUSE.—In the general treatment of the plants usually kept in this house, we cannot do better than recommend a continuance of the management detailed at p. 291. Rather less shading may be employed, though it must not be suddenly discontinued; this will, in great measure, be regulated by the state of the weather. All the larger plants, which have nearly done growing, should be exposed during the month to the open air, to harden and mature them. Smaller plants stand less in need of exposure, and are more liable to injury from untoward weather; they are best kept continually in pits, with plenty of ventilation.

Potting and Drainage.—Where any of the plants are required to be grown on as fast as possible, and were shifted in the early part of the summer, they may again be potted into larger pots, in the manner formerly described. Let them be thoroughly drained. From time to time examine the plants that do not require shifting, and see that the drainage is perfect; very much of success depends on this.

Watering.—During the whole summer it is as important to attend to this operation, as in winter, only now it is necessary to observe that the plants get enough, while in winter they must not have too much. Let them now be just thoroughly moistened—not wetted at top while they remain dust-dry below; this is what kills many plants of this nature.

CAMELLIA HOUSE.—*Camellias* will now have made their growth, and have been placed out of doors, as directed at p. 291. Towards the end of the month, the plants which were forced into bloom at the earliest period last year, and which, consequently, were the earliest in making their growth, and ripening their wood, should be removed into the house again, as a stage of preparation for being subsequently submitted to an increased temperature for the development of their blossoms. If regulated for the *Camellias* chiefly, the

house should be kept rather cool, with abundant ventilation, and moderately moist by syringing morning and evening. With such regulations, it forms an excellent place for nursing on young plants of rare and valuable kinds, and also for treating sickly plants of green-house habit.

Budding.—The budding of *Camellias*, *Oranges*, *Lemons*, and similar plants, may be prosecuted whenever the young wood and buds have become firm and mature. The plants require to be kept quite close in a propagating pit.

Azaleas.—These will now have completed their growth, and every care should be taken that they “set” well for bloom, which is secured by well ripening the shoots in a cool green-house, and then placing them for a short time out of doors. These plants will throw off their leaves if they are allowed to get dry, or submitted to any sudden changes.

PELARGONIUM HOUSE.—*Pelargoniums.*—In the general routine management of these plants, nothing can, with advantage, be added to the remarks at p. 291. For the most part the plants will be out of bloom, unless, indeed, it has been considered desirable to keep up an unintermitted display of flower. This is hardly worth caring for, as flowers of all kinds are numerous enough at this season, and *Pelargoniums* never bloom so well, nor last so long, during the hottest part of the summer, as they do either earlier or later, or when the weather is cloudy and cool, compared with our ordinary summer temperature. For this reason, if there are plants in bloom, the house will be kept well shaded, and as cool as possible by full ventilation, added to which, the floors, walls, stages, and indeed every available surface except the plants, should be moistened as often as it can be done, to counteract the effect of hot *dry* air on the blossoms, for it is no doubt this which makes them fall so soon after they have expanded. The plants which have been cut down will require to have their young shoots thinned early, before they get crowded: all the weaker shoots should be taken off, leaving a sufficient number, according to the size of the plant, of the best placed and strongest shoots, to form a close bushy head. When the plants are not intended for flowering until next spring, the tops of these shoots should be pinched out frequently. Repot the later plants as described at p. 292.

Winter-flowering Plants.—Those intended to come into bloom early in the autumn, should not be stopped later than towards the end of the month. Up to that time they should be kept in pits, the young shoots kept stopped back; they will, in consequence, be forming bushy plants, and will not exhaust themselves

by the production of useless flower-buds before they are required. The stopping back of the plants should be so managed as to secure a successional bloom from the time they first come in.

Cuttings of any of the choice varieties may still be put in, when it is desired to increase the stock; this will, however, now be chiefly the case with seedlings of merit which may come late into bloom, a stock of the older varieties being secured earlier in the season.

Calceolarias.—The old plants, as they go out of flower, should have the flower-stems cut away, and the surface soil renewed; the plants should then be put into a cold frame, and encouraged to produce young shoots, which are required for propagation. Young stock should be raised every year. The shoots produced after flowering root freely, and make strong flowering plants for next year. If any cuttings have been already rooted, get them potted and shifted on as rapidly as possible. *Calceolarias* grow well in rotted turves—grassy turves—of heath soil.

Cinerarias.—A few more young plants should be provided from the suckers of those which have done blooming, and have been planted out for the purpose. These suckers are to be placed in small pots at first, and shifted occasionally as often as they require it. Those young plants that were separated earlier, and are now established, must be repotted into larger pots, in rich, light, loamy soil, once or twice during the autumn. Those intended for the earliest blooming must be helped forward as much as possible, by giving them an extra shift, and keeping them a trifle closer than the rest. The ordinary stock of plants should have perfect ventilation.

Fuchsias.—This is a good time to see to propagating a stock of young plants of any kinds that may be required. The specimen plants blooming in pots, will require abundant supplies of water, for they absorb large quantities. If the pots are getting full of roots, the strength of the plants must be kept up by using manure water; apply it in a clear diluted state, at every alternate watering. The plants for autumn flowering may now get their final shift. We would again recommend to notice the old species mentioned at page 292. A new one in the same style of growth and flower, but very much larger than any of them, is in the possession of Messrs. Lucombe, Pince, and Co., of Exeter; it is named *corallina*, and has leaves something like those of *F. radians*.

Seedling Plants.—Where a few valuable seeds of any of these plants—*Pelargoniums*, *Calceolarias*, *Cinerarias*, *Fuchsias*, &c.—have been saved, it is better to sow them at once than to reserve the seeds till the spring.

The seeds should be sown in pots of light rich soil, placed in a mild hotbed, so as to get the plants up as quickly as possible; they must then be potted singly into small pots, and be kept in the very best places that can be found for them in the green-house, in order to get them on as forward as possible. The seedling plants of each of these kinds will flower sufficiently well in a six-inch pot, to which they may be removed at two stages, from the three-inch ones they were first potted into. These plants should never be stopped; the object is to get them to throw flowers as soon as possible, in order to know if they are worth keeping or not. When the plants can be got forward in the autumn, they will generally bloom in good time during the next summer. *The character of no seedling should be considered as established till it has bloomed in two seasons*, first as a seedling plant, and then the following year grown into a specimen. Sometimes seedlings bloom well the first season, and never come well again, and this is why they require testing. Of *Pelargoniums*, varieties of a bright purple and bright scarlet colour, and fancy bright coloured spotted ones, like *Anais*, are particularly worth attending to. The carnation-striped *Calceolarias* are most desirable.

THE PLANT STOVE.

As in the green-houses, so here, some limitation must be made to the freedom of growth. It is not necessary yet to stop the plants from growing altogether, but still their growth must in some measure be checked. The first step should be taken, in bringing them into a state of repose for the winter. This, however, may be deferred till towards the end of the month, so that the plants may have the advantage of growing throughout the earlier part of it.

Temperature, &c.—In the earlier part of the month, the temperature and atmospheric humidity recommended at page 292—80 degrees by day, and 65 to 70 degrees at night, with plenty of moisture—may be kept up, in conjunction with moderate ventilation during the earlier part of the day. Towards the end of the month the average temperature must be allowed to drop two or three degrees, and a little less moisture must be kept up. This will prepare the plants for still more sensible declensions of heat and moisture next month. The same must be said of watering at the root, but the plants must be fairly supplied for some time yet.

Pruning.—In the case of all the shrubby and half shrubby species, the stopping of the shoots should be from time to time attended to, in order to keep the plants dwarf and bushy; this is specially to be done with all such plants as throw their flowers from the

axils of the leaves. Such plants as the *Eranthemums*, *Aphelandras*, &c., which bloom only at the points of the moderately strong shoots, must not be stopped, except during the earlier stages of their development, or all the flowers will be removed. The stopping of the ligneous species is generally less necessary, than in the case of the half-shrubby ones; but where they are forming strong irregular shoots it should be attended to.

Maturing the Growth.—All the earlier flowering plants, that have completed their growth, should be treated with the view to ripen and mature the growth they have made: this is effected by keeping them somewhat drier—if shrubby or herbaceous, moderately so; if bulbous or tuberous, they should be gradually dried off—in some cases entirely, in others almost entirely. At the same time that this treatment is given, the plants are to be kept fully exposed to light, and also to the direct sun (except in peculiar instances, as in some Ferns). The same kind of treatment should be afforded, from time to time, to different plants, as they complete their growth.

Achimenes.—A few cuttings should be put in, of some of the kinds to flower late. *A. pedunculata* and *A. hirsuta*, are suitable for this. Young plants of *A. picta* raised now and well managed will flower next March.

Balsams.—Cuttings selected from the best of the varieties now flowering in the green-house, planted in light soil, placed in a dung-bed, and subsequently removed to the stove, and repotted, will furnish neat blooming plants in October; they afford some variety of blossom.

Amaryllis.—When the different *Amaryllids* are ripening their leaves, which will generally be the case, the bulbs should be gradually dried off, and set away in a dry place, not too warm. As they are wanted to come into bloom, pot them afresh, in a mixture of loam and peat, and remove them to the stove to start them. Unless the bulbs are strong, and were well matured in their growth the previous season, they will not usually produce flowers.

Winter flowering Plants.—Encourage now the growth of all the stock provided for winter blooming, including such plants as *Eranthemums*, *Justicias*, *Aphelandras*, &c.: let them, however, be encouraged to make sturdy growth, not coarse long watery shoots, which never flower satisfactorily.

ORCHIDACEOUS HOUSE.

The Orchids must share in the commencement of a more rigid discipline, as the end of summer approaches, but it need not yet be carried beyond the point recommended,

namely, just commenced, and that in an almost insensible proportion.

Temperature, &c.—The temperature may range from 75 to 80 degrees during the day, and at about an average of 65 degrees at night. Towards the end of the month it may fall two or three degrees; and at that period too a *somewhat less* amount of moisture may be maintained. In other respects the general treatment given at p. 293 may be continued.

Shading.—If permanent shading is fixed on the house, it would be well to change it for some of a slighter nature sometime during the month, as a graduated step towards removing it entirely. Where the shading material is mounted on rollers, and is in consequence moveable, the same result may be secured, by employing it less frequently—only when the sun is very bright indeed. In the culture of plants, no change of treatment of any kind should be brought about suddenly.

Dendrobium.—The species which flower when the plant is at rest, that is, after growth, such as *D. nobile*, *cœrulescens*, &c., should be placed in the cooler house, where they get more air: little water must be given for some weeks, and the flower buds will then be produced. Those species, on the other hand, which flower just before they commence growing, such as *D. densiflorum*, *aggregatum*, &c., require warmer treatment; they should be kept in the warm house with little water, until the flower-buds are seen.

Potting.—Continue the top dressing, and shifting such of the plants as require it. Those which hang on blocks, or are suspended in baskets, should have sphagnum moss, or lumps of turfy peat placed about their roots, where they require it.

In addition to the native *Hydrocotyle vulgaris*, and some of the smaller *Lycopodiums*, mentioned as being suitable for running over and ornamenting the pots and baskets in which Orchids are planted, the native *Sibthorpia europæa*, with small reniform leaves and slender trailing stems, may be employed for the same purpose. There are doubtless many other plants, which may be so employed.

FORCING HOUSE FOR FLOWERS.

Nearly all the operations connected with this department, have been carried on out of doors, or under slight protection, for some time; but it is now necessary to begin to think of providing more efficient protection for many of the plants which will be required for decorative purposes in winter and early spring. To this end, pits, frames, and temporary shadings of various sorts will be found very useful.

Cacti, which have been placed out to perfect their growth, should now be well protected from heavy rains, or taken into a dry

and airy house, if the weather prove cold and wet. Keep them dry, even to a partial shrivelling of the shoots.

Pinks, and allied plants, should still be carefully attended to, in weeding, watering, &c. Towards the end of the month, the strongest plants should be carefully potted up in rich compost, to be used as the first batch for forcing. Place them in a frame, and keep the frame close until they are established in the pots, and then give air freely.

Heliotropes and similar plants should be shifted, if not in pots as large as wanted, and continually stopped and deprived of their flowers until they assume a neat bushy form.

Bulbous Roots should be kept dry if they have lost their leaves, which will be the case with nearly all, unless they have been stimulated to a second growth by an undue supply of moisture.

Amaryllis, in most of its splendid varieties, should, in particular, be now thoroughly dry, and it matters little, if in that state, whether those which completely lose their leaves, as *Johnsoni*, and *vittata*, and their numberless seedlings, be retained in their pots or turned out, and exposed on a dry shelf in the stove, or other house, until they show their flower-stem, or exhibit other signs of growth.

Pelargoniums, before shifted and placed in pits, should have another shift or two in the course of the month, and should be also continually stopped, so as to form handsome plants. Cuttings should also be still put in, and any well rooted ones should be potted off, and submitted to the same treatment as the older ones, taking care to use a light sandy compost.

Chinese Roses may still be propagated, if a sufficient stock has not been obtained. Shift such as require it, and continue to stop them, so as to obtain good bushy plants, that will be likely to produce a copious bloom.

Other Roses for forcing, should receive no more water, after they show evident signs of being at rest, than is absolutely necessary to keep them from shrivelling. Laying the pots down on their sides in a shady place is a good plan, as it will keep them in a state of rest, and will also prevent them from being drenched by heavy rains, which would very likely start them into a second growth. All other hard-wooded plants intended for the same purpose should be treated in a similar way, especially those intended for the earliest forcing; more especially if the same plants are forced at the same season, year after year, as previously recommended.

Violets, *Lily of the Valley*, and many plants of analogous growth, may now be potted up, and placed under shady walls, or in frames, to prepare them for forcing; take care to pro-

tect them from heavy rains, so that the mould in the pots does not become soddened.

After-treatment.—This is very similar to that before recommended. Keep every thing clear of weeds, and be very guarded in watering anything which appears approaching a state of rest; as if a plant be started into growth at this season, there is little chance of its being useful for forcing.

PITS AND FRAMES.

Plants intended for forcing into flower during the winter, as well as green-house plants of the more delicate kinds, may still occupy these structures to advantage. Such plants indeed require to have as perfect ventilation as possible, while at the same time they should have protection from heavy rains, and very powerful sunshine: these conditions are more readily supplied in pits than in larger structures, or indeed by any other means.

Half-hardy Plants.—It is desirable, sometime this month, to turn attention to the propagation of a supply of bedding plants for next year. Cuttings should be taken off the short-leafy shoots—such as are not showing bloom,—and planted in pots of light sandy soil; the pots being placed in mild hotbed frames, the cuttings sprinkled daily, and the frames shaded during sunshine. The frames should be kept nearly but not entirely closed; the lights may be propped up at back, a couple of inches or so at night, and during the day they must be either closed, or left a little open, according as there may be heat in the bed, or otherwise, or the weather may be sunny or obscure. When there is much heat in the bed, so as to give rise to any steam, it will not be proper to confine it; on the other hand, if they are left open in arid weather, the interior sometimes dries up too rapidly, to the injury of the cuttings. What is wanted is, to keep the atmosphere about them in an equable, mild, and moderately moist state—neither excessively hot nor becoming very cool—neither with much confined moisture, nor at all arid. There are at least two distinct general systems of keeping this class of plants through the winter: one is, to root the cuttings either in beds, boxes, or pots, and to get them transferred separately into very small pots to stand the winter; the other is to plant the cuttings evenly and somewhat closely in shallow pots of larger convenient size, in which they are allowed to stand through the winter, and are separated in the spring; sometimes before planting out time, and at other times, they are kept in these pots till they can be put out in the beds. Both these plans have their followers, and their advantages: the former, undoubtedly, may be made to secure the best plants, but they take up more space, and require rather minute atten-

tion in watering ; a few, at any rate, should be grown this way to furnish an early batch of plants. The latter plan is better suited for keeping over very large numbers of plants—a score of plants occupying, in this form, but very little space ; and where there is the convenience to separate them early in spring, and give them a little assistance in frames, the plants are very nearly as strong as by the other plan.

Alpine Plants.—This is a good time to go through the collection of those kept in pots ; to divide any that are required to be increased, and to reduce such as are getting too large, and of which a greater number is not required, so that the whole collection, as far as possible, may consist of neat even-sized plants, in small even-sized pots : three-inch pots are often made to do ; five-inch ones are certainly quite large enough.

Stocks.—Fine double Stocks, of the dwarf kinds, are always desirable, and become especially so in the month of February ; for this purpose sow seeds of the intermediate variety now, and let the young plants stand exposed outdoors till the beginning of November, or until they are liable to be injured by frost : then place them in the frames, and remove them to the green-house in succession. The same plan may be adopted for an early supply for the borders.

WINDOW GARDENING.

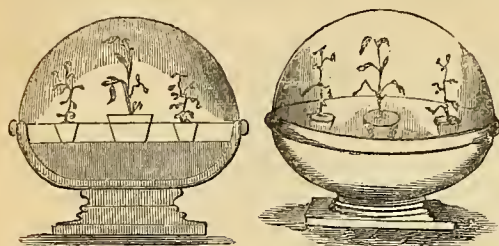
We will offer our present remarks under two divisions, one referring to the present treatment of plants in bloom, the other to the provision of something to take their place in winter.

Plants in bloom.—Where the directions already given, of shifting various annual and half-hardy sub-shrubby plants into pots of somewhat larger size, have been properly attended to, there will be little other attention required besides the due application of water. It is absolutely indispensable that the operation of watering should be assiduously performed, for on it depends very much of success. Plants situated as these are with respect to evaporation, unless regularly as well as liberally supplied, will absolutely suffer from want, and this will cause the leaves to turn yellow, and the flowers to fall off, or come small and imperfect. Where the pots are getting full of roots, and the plants are required to keep growing on yet for some time to come, a little weak clear manure water may be used with great advantage. A liquid manure, known as Humphrey's compound, is excellent for plants in pots ; but any liquid manure will do, provided it is not administered in too strong doses.

Winter Plants.—Where there is no other convenience than the window for growing plants, but little can be said of having plants

in flower—unless it be purchased ones—except during the summer. If there is a small green-house, or the convenience of pits and frames, a few plants may generally be had in bloom even throughout the winter, by a proper selection of kinds, and some of these may be removed to the window while in blossom. And in like manner, if there is no such convenience, and blooming plants are specially prized, one or two, or more, may from time to time be procured in the nurseries, or in the flower-markets. If the window alone is trusted to, it is better, instead of depending much upon blooming plants, to have plants chiefly for the winter season possessing some beauty or peculiarity in their foliage. Thus there are plants with variegated leaves, such as the variegated-leaved variety of the small shrubby *Daphne Cneorum*, the variegated small-leaved myrtle, and many others ; plants with permanent foliage and of shrubby habit are preferable. Then there are several small evergreen shrubby plants which are suitable, and which may be grown for the sake of the pleasing associations connected with their constantly verdant foliage ; among these the different myrtles occupy a high position. *Daphne hybrida* is also a pleasing evergreen, and is moreover almost constantly furnished with its dull purple, but sweet-scented flowers ; all these of course should be kept inside the window, with fresh air on mild days. For the outside and for balconies, some of those mentioned at p. 18, may be provided. Then again for the inside, there are many plants with fragrant foliage, such as a host of the old-fashioned *Pelargoniums* ; thus there are species called the nutmeg-scented, the citron-scented, the lemon-scented, and the rose-scented, all of which have a powerful and very pleasant odour. The musk plant might be had in a fresh state by raising young plants from cuttings late in the season. Besides these, others might be selected. In addition to all these, we would especially recommend the smaller cryptogamic plants, such as mosses, and the smaller *Lycopodiums* and *Ferns*, which would grow under close glass covers, and afford a never-failing source of interest and gratification. One or two ornamental vases, covered by a clear bell-glass, should be found in the window of every drawing, and every living room ; if filled with these minute and at first sight uninteresting cryptogams, and the latter are at all closely looked to, they cannot fail to impart pleasure of equal depth and intensity to that which can be excited by more gaudy subjects. Such a vase as that here represented would be very ornamental, and might be made of almost any size, from what would merely contain two or three of the smallest mosses, up to a foot or more in

diameter. If Ferns or Lycopodiums are used, they may be planted in thimble pots in sandy peat earth, these being set among some fresh



green moss to hide the pots. In the construction of the vase, nothing is essential beyond having a base inside on which to set the plants, and a groove round the margin to drop the edge of the glass into, the groove being filled with water.

ROSE GARDEN.

Those buds which have united, or may be seen to be doing well, may be loosened, that is, the ties removed and be again tied, so as not to confine them so much. The growing part of the stock must be cut off, to give the buds the benefit of all the nourishment. It will not do to cut all the branch off that is beyond the bud, because it might die back, but the side shoots of the stock must be taken away as fast as they come; so also must all shoots which come from the stock, whether on the stem or on the branches that the buds are inserted in, or from the roots. Until the buds are established it may be prudent to let one shoot remain growing beyond the bud, to create the proper circulation past the bud. Budding may still go on, as long as the bark of the stocks will rise. Seedlings that indicate novelty may be large enough to bud from this month, even those of the spring sowing, though it is not often the case, but of course those of last year are, and they are also developed enough to show their habits and to bud if necessary. Those which are smooth-skinned, or show anything like the choice breed about them, should be budded on strong China stocks. Cuttings of all the sorts may be put in under a hand-glass in a shady border, or if very choice they may be put in pots and a bell-glass over them, so that they may be in the house and be placed in the shade. Struck cuttings and seedlings not already out may be potted off, and placed in a frame till established. Pruning back the branches which have done their work of flowering may go on as before; always cut back to the next strong eye. A constant examination of the rosery, to see that no stocks are growing, and that no suckers are springing up, is very necessary, from the rapid

growth they make, always at the expense of the buds or the head.

FLOWER GARDEN.

Anemones.—If the leaves are decayed take up the roots and dry them in the shade, and then store them away until planting time.

Auriculas.—Repot such of these as require it, but avoid giving them too much water, or setting them growing; for if they do this, and throw up blossoms now, the spring-bloom is weakened, and comes out of character. If they are not very well rooted, clear away much of the soil, and if the principal root is rotting cut away the decaying part, and pot them again carefully. By all means keep the plants quiet through autumn and winter. Auricula seed may be sown in pans in cold frames.

Biennials and Perennials.—If seeds were not sown on poor soil, as recommended some time ago, they may be sown now on richer ground to supply the deficiency. In case of a severe winter, however, these young free-growing plants are more likely than the others to suffer.

Bulbous Plants.—Seeds of any of these may be sown in pans, and kept in a cool frame through the winter. The principal kinds referred to are anemones, ranunculuses, tulips, hyacinths, narcissus, lilies, crown imperials, irises, crocuses, &c. Many kinds which are usually kept in the ground, as lilies, &c. may be transplanted now. Plant the autumn-flowering bulbs.

Carnations.—Finish layering these early, where it has not been done: if the weather keeps dry and hot, the labour of moistening and shading the layers is well repaid.

Climbing Plants.—Beyond what is necessary to keep them in their places these plants should not be too rigidly tied in, for the effect of this is to destroy all that gracility of disposition which they assume when left to a certain extent to a natural growth. The main stems should be fastened, in most cases, except perhaps at the points when they have nearly done growing, but the laterals should seldom be tied in.

Cuttings, generally, of such plants as furnish them, may be taken off and planted, for the purpose of raising young stock.

Cyclamens.—Plant out the spring-flowering Cyclamens, and look after the seed of the autumnal kinds.

Dahlias.—These will now be coming into bloom, and as the blossoms are particularly liable to be attacked and spoiled by insects, every possible means of preventing their depredations should be employed. Thin out the shoots if they become too much crowded, but do not make too free with the plants in this

respect; it is better to remove a great quantity of the buds that are not required, than too many of the branches. The latter may be flinned, just enough to keep them from getting much crowded. The plants require to be efficiently staked and tied.

Herbaceous Plants may, towards the end of the month, or soon after they have done flowering, be propagated by dividing the roots; this is best done early, for then the divided pieces have time to get strongly established before winter. Many things, such as Pentstemons, Phloxes, &c. are also propagated by cuttings.

Hyacinths.—Prepare the soil for the beds in which the young stock and the blooming roots are to be put out. If more attention were paid to the growing of these roots, so much dependence need not be placed on the Dutch florists for a supply.

Hybridizing.—The height of summer affords a good opportunity for hybridizing any annual flowers which may be thought likely to improve under the operation. We refer to such as are seldom thought about, in connexion with this operation.

Larkspurs.—Few of the annuals are more showy than the double dwarf Larkspurs, and yet they are getting much neglected. It would be worth while to look out for some that show a good strain.

Lobelias.—To have these in perfection they must get plenty of moisture, for they are sub-aquatic plants.

Mowing must be well followed up, to secure a close short turf. If the hot weather should have turned it brown—as sometimes happens—do not water unless a good soaking can be given. Guano, or some of the saline manures dissolved in water, if applied occasionally in a weak state, will keep it fresh and green.

Pansies.—If a succession of blooms is sought, fresh beds of young plants must be prepared monthly, and young plants must be raised for succession. This is a good time to put in cuttings for a main stock, for flower-garden purposes. Some of the selfs are very showy in the flower-beds: a large cream-coloured one, a yellow, and a dark one, almost black, are remarkable; propagate these in abundance. If seed is saved, let it be from *young plants of kinds possessing good properties*, and sow it as soon as ripe.

Picotees.—Treat the same as Carnations. If any seed pods have been saved, look after them, and gather them as soon as they are properly ripened; sow them in pans, and keep them through the winter in cold frames.

Pinks.—When the pipings are rooted, get them planted out into blooming-beds as soon as possible, so that they may get well established before winter.

Polyanthus.—Seeds of Polyanthus may be sown in the open ground.

Ranunculuses require treatment in all respects similar to that recommended for Anemones.

Seeds.—If any choice seeds are preserved, look after them, and gather them as they ripen; thoroughly dry them in the sun, clear them of their husks (in most cases), pack them in dry paper, and place them away in a dry situation.

Summer flowers.—Where vacancies in the beds or borders occur, plant out some of the plants prepared in the reserve garden, that no blanks may long be observed. The half-hardy perennials are better than annuals, generally speaking, for this purpose.

Tulips.—By the end of the month, plant the small offsets; keep the other roots cool and dry. Throw out the soil of the beds for the blooming roots, and have it often turned and stirred.

Watering will depend entirely on the weather: if very dry, water thoroughly sometimes, and keep the surface stirred. Solutions of many of the saline manures help to keep the soil moist.

KITCHEN GARDEN.

Continue to plant out succession crops; hoe deeply; and clear off, or dig in, all exhausted crops. The sowing and saving of seeds, pricking out plants, and keeping down vermin, must be energetically attended to.

Artichokes.—If they are wanted large, thin out the heads to four or five, and water in warm, cloudy weather with liquid manure.

Beans (French).—Towards the end of the month, protect the bearing crops from frost, by looping them over, and throwing mats upon them at night.

Brocoli.—Fill every spare corner, and plant—say about eighteen inches apart; protect against slugs by laying down handfuls of grains, fresh from the brewery, which can be looked over at night, and the slugs destroyed by watering with lime-water, or any other convenient mode.

Brussels Sprouts.—Tie up the strong plants to single stakes.

Cabbages.—Sow for the main spring crops the first week in the month; those sown last month will be apt to run to seed; and as they require to be of some strength to stand the winter, the present may be said to be the best time. The good early sorts are Nonpareil, Matchless, East Ham, Vanack, and early dwarf; for later crops, sow the Imperial and Battersea; the red Dutch may also now be sown with advantage. Give the whole a good situation and soil.

Cauliflowers.—Sow on a light, rich border, about the middle, and again at the end of the

month; probably, a small sowing the first week also will be found useful, as the seasons vary in bringing on vegetation. The best sort is the Walcheren.

Celery.—Clear off all suckers; be very careful in the first earthing, always choosing a dry day for the operation. Principal crops may still be planted.

Carrots.—Make two sowings, giving them an airy, light, and dry situation; they will be found useful in spring. The Early Horn, Surrey, and Altringham are good sorts.

Chervil should now be sown: any situation, if the soil is light, will do.

Couve Tronchuda, or Portugal Kale.—Sow in a frame, and treat as Cauliflower.

Coleworts.—Plant out in abundance, say at eighteen inches square.

Endive.—Plant out a full crop, and make another sowing to come in late; tie up the mature crops in succession, when dry, for blanching, or throw slates or boards upon them.

Herbs of every sort should be gathered, dried, and put in a dry place; many will do to be tied in small bundles, and hung up at once where they are to remain. Make it a rule to cut them just as they come into bloom.

Lettuce.—Sow, on a warm border, the Brown Cos, Hardy Hammersmith, Victoria, and Brighton Green, which are proved to be excellent. Another sowing must be made next month, for the winter.

Mushrooms.—Keep the atmosphere clear and cool, by watering all about the house, giving air, and keeping dark. Collect horse-droppings for future beds; sheep's dung can be mixed with the layers, when putting up the beds.

Normandy Cress.—Make a large sowing for winter use.

Onions.—Now is an excellent time for sowing for the chief winter crop, the ground having been previously well trenched and manured. The Strasburg, Tripoli, and Reading, are good sorts. As the spring-sown crops will be fast maturing, lay the stems over with the back of a rake, which will assist the swelling of the bulbs. Be careful in harvesting those that are ripe; have them well dried, and laid in a dry loft, or tied up in bunches or nets, and hung in any dry situation.

Parsley.—This month being a favourable time to sow all biennials, it will be found proper to make another large sowing: it is very seldom found that in winter there is too much of this useful vegetable. Water the other sowings with soot-water, also giving a good thinning and hoeing.

Parsnips.—Prepare a place for making a sowing next month—the deeper the better; autumn sowings sometimes succeed best.

Peas.—Give liberal supplies of manure-water, and protect by netting.

Radishes.—Continue to sow every fortnight or so. Wood's Early Frame, Scarlet Short Top, and the Red and White Turnip, are mostly grown; the Black Spanish is said to be hardier, and, when fit, may be taken up, and preserved in sand until spring.

Salads.—All sorts, as Rape, American Cress, Mustard, &c., will be found to remain longer in use than in summer, and need not be sown quite so often.

Savoy.—Plant out any that remain: they will yet be serviceable.

Spinach.—The early pea border, or some such situation, will be found useful for Spinach: if rich, so much the better. Sow twice this month: the prickly sorts are the hardest. Thin and hoe the early crops.

Tomatoes.—Keep these nailed to the wall, and remove all laterals; this is the secret of getting them ripened in late situations, allowing only a few to remain.

Turnips.—The last sowing for the season may now be put in, taking advantage of moist weather. The early Snow-ball is an excellent kind, and may be added to the list of choice sorts. Thin out, and hoe former sowings.

Avoid, if possible, treading the soil when wet. If the weather proves dry, attend to watering when transplanting. Immediately remove all crops which are past, and see that another of the same family is not returned to the same soil; but keep cropping in *rotation*.

CUCUMBER AND MELON FRAMES.

Cucumbers in bearing may be managed as recommended at p. 298. When it is intended to grow them through the winter, young plants should be raised now, either from seeds or cuttings; the latter are preferable, if taken from a good variety, as you are certain of having it genuine. If you make up a small hot-bed, to rear the young plants, be careful it does not get too hot; a temperature of seventy degrees is a good medium at this season.

Melons.—As the produce of the different crops approaches maturity, withhold water from the plants, to improve the flavour of the fruit; let them get as much light as possible, and at the same time tolerably free ventilation. Consult also what is said at p. 298.

FRUIT GARDEN.

Protect fruit of all kinds from the ravages of birds, &c., by means of netting, canvass, &c. Still thin, where the fruit and wood may be too thick; keep nailing in wall trees, and give them all possible light and air. Get the fruit room in readiness, by cleaning and airing it well; if the shelves are kept perfectly clean, we prefer laying the fruit on them, to using hay or any similar material.

Apples.—As soon as they change colour, keep a sharp look out after woodlice, slugs, &c.; strew out potatoes, lettuce leaves, bean stalks, or brewer's grains, to decoy them, when they can be easily destroyed. The choice sorts of apples can be increased by budding. Break off all the breast-wood of trained trees, and shorten the leading shoots of standards.

Apricots.—All watering must now be withheld until the fruit is gathered; make provision for those which are ripe to fall into mats, nets, or upon moss; look over the trees every morning, and pick the ripe ones, and lay them in a cool place.

Budding.—Loosen all the bandages of those put in last month. Now is the preferable season, and some recommend beginning with cherries, apricots, &c., leaving pears and apples to the last; but this has to be determined by the state of the buds and shoots, so that no rule can be given.

Cherries.—Give the early trees a good syringing, and see that the Morellos are netted in time. Remove the nets from the trees as soon as the fruit is gathered. Lay in all the young wood of old trees, as the fruit comes better than on old spurs.

Currants.—See that those which are matted up are quite secure, and kept from damp.

Figs.—Remove all fore-right shoots; pinch off the points; regulate and nail in the shoots, using the knife as little as possible.

Gooseberries.—Attend to those which are netted or covered up, allowing no mode of entrance for the birds, &c.

Nectarines, &c.—Again look over, and nail in any branches that may, in the least, require support, especially in young trees. Take off some of the leaves from the fruit, so as to give it the more sun; prepare to catch the ripe fruit by hanging mats or nets below, or moss along the bottom of the wall.

Peaches.—Give a final look over, until the fruit is gathered, and see that they are well nailed and thinned, both in wood and fruit; withhold water as soon as they take their last swelling. When ripe, provide for their falling, as with Nectarines.

Pears.—The weather has been most propitious for the finer sorts of pears. Take off all unshapely fruit, &c.; thin them where there is a probability of an overload; divest the trees of all the breast wood, conducting all the strength of the tree to the buds and fruit. Mulch and water those that have heavy crops.

Raspberries.—Thin out the canes to four or five; it would assist them to water with liquid manure. Stop the strong shoots, and secure the whole with stakes.

Vines.—Thin out the berries as soon as

they are set, and return to thin them a second time. Take off all laterals, and stop the shoot two eyes above the bunch; keep the wood very thin, so as to allow free scope for the sun and air.

HORTICULTURAL SOCIETY.

THIRD EXHIBITION FOR 1846.

THE third and final exhibition for the season, took place at Chiswick, on July 11th. As July exhibitions always are, it was inferior to the former ones in the display of flowers, but superior as far as regards fruit. There was a good display of carnations and picotees.

Store Plants.—Many of the same kind of plants noticed at p. 321, were again produced, especially *Clerodendrons*, of which there were many magnificent plants from Ealing Park. Mr. Robertson's best plant was a specimen of *C. fallax*, about four feet high, with a single stem, the large heart-shaped leaves and smaller branches occupying a diameter of four feet; this plant had twelve panicles of its rich scarlet flowers. From the same place several of the same kind were nearly as fine, and with them was a good plant of *C. paniculatum*, with an immense central cone-shaped mass of orange-scarlet blossoms. Mr. Ayres, of Brooklands, had a good specimen of the variety of *C. fallax*, called *superbum*. Of *Ixoras*, Mr. Green, of Cheam, had a plant of *I. coccinea*, three feet high; and Mr. Fraser, of Lea Bridge, a larger one, both with very numerous heads of vermilion-coloured flowers. Mr. Ayres had a different one named *I. crocata*, with bunches of orange-scarlet blossoms; this was a neat bush two feet high. *Rondeletia speciosa*—a fine shrub with bunches of orange-scarlet flowers, was shown in good condition by Mr. Green, and Mr. Robertson: the latter had a large plant of *Cuphea Melvillei*, which bears bunches of tube-like red flowers just tipped with green. There were some pretty specimens of *Gardoa Hookeri*, a slender sub-shrub with light-red, salvia-like flowers; the best were from Mr. Stanley, of Sidecup, Mr. Fraser, and Mr. Robertson; they were about two feet high, and something more in diameter. *Æschynanthus parasiticus*, a plant with sub-trailing stems and scarlet tubular flowers of great beauty, was from Mr. Bruce, of Tooting. Mr. Stanley had a tolerably good plant of *Gloriosa superba*. Numerous specimens were produced of that deliciously-scented white-flowered climber, the *Stephanotis floribunda*, trained on trellises of various forms; Mr. Green had one six feet high; Mr. Fraser had one about the same size; and Mr. Robertson, Mr. Eyles, of Roehampton, and Mr. Carson, of Cheam, had plants considerably larger: Mr. Young, of Camberwell, had a

plant of the same, trained on a large flat circular trellis; these were all beautifully bloomed. Of another splendid creeper, the *Allamanda cathartica*, there were some good plants; Mr Fraser had one seven feet high, covered with large bunches of trumpet-shaped bright yellow flowers; and there were other plants from Mr. Ayres and Mr. Carson, of about the same size. Mr. Robertson had a very neatly bloomed plant of *Schubertia graveolens*, a white-flowered creeper, a good deal resembling the *Stephanotis*, and which is sometimes called *Physianthus auricomus*. Much of the beauty of the exhibition was attributable to the plants here named.

Green-house Plants.—The most conspicuous among these were some magnificent plants of *Kalosanthes*, better known perhaps as *Crassula*, sent by Mr. Ayres and Mr. Fraser. Mr. Ayres had *K. coccinea*, and *K. c. media*, and Mr. Fraser had *K. c. nitida*, and *K. c. grandiflora miniata*; these are slight varieties of each other; the plants were about two and a half feet high, and three feet across—some rather more, some rather less—and were covered with large heads of crimson flowers: the stem of the *Kalosanthes* is covered with short fleshy leaves in four even rows. The next remarkable plants were some specimens of *Sollya linearis*, from Mr. Fraser, one six feet high, and the other three, and trained on a cylinder-like trellis; these plants were covered with little bells of an intensely deep and clear blue colour: no collection of climbing plants should be without this *Sollya*, which is the best of its genus. A large plant of *Phœnocomia prolifera*, with crimson everlasting flowers, and whose leaves have the appearance of little woolly knots along the branches, was sent by Mr. Robertson; this, which is difficult to grow, was in robust health, and perfectly feathered down to the pot; it was four feet across and as much in height. Another everlasting, the *Astelma eximia*, which has large leaves thickly covered with close white wool, and bunches of crimson flowers, came from Mr. Bruce. Of shrubby *Veronicas*, Mr. Ayres had a large bush of *V. salicifolia*, four feet high, and quite bushy; this has pendent spikes densely set with pale lilac flowers: a large plant of *V. speciosa*, came from Mr. Balston, of Poole; this kind has dense upright spikes of purple flowers. Mr. Robertson had a neat plant of *Roella ciliata*, a shy growing species, which has large bell-shaped pale-blue flowers with a black centre; there were some other neatly grown plants of the same. From Ealing there was also a beautifully grown *Epaeris miniata*, two feet high; this is a new kind lately sent out by Messrs. Loddiges, and differs from *E. grandiflora* among other things in the tube of the flower being scarlet instead of rose-

crimson. An old plant, with pale-blue flowers, the *Plumbago capensis*, was sent in good condition and of large size, by Mr. Catleugh, of Chelsea. A very large *Clethra arborea*—a plant something like an *arbutus* with branching spikes of white bell-shaped flowers—came from Mr. Young. *Chironia floribunda*, with gay glossy pink flowers, came from Mr. Carson. Of *Leschenaultia formosa*, a little heath-like shrub, with oddly shaped crimson flowers, good dwarf well-bloomed plants, were sent by Mr. Stanley, Mr. Ayres, and Mr. Green. The somewhat rare *Ioichroma tubulosa* from the Society's collection was placed on the tables. *Lisianthus* (or *Eustoma*) *Russellianus*—a plant intermediate between the classes of stove and greenhouse—was sent in a well-grown state, by Mr. Green.

Heaths.—The heaths were very fine, as well as numerous, but we must only name a few of the most striking specimens. *E. Irbyana*, four feet through, came from Mr. Dawson of Brixton; a smaller plant was contributed by Mr. Hunt, of Bromley; and a very nicely-grown one, two feet high, and a yard across, was sent by Mr. Taylor, of Streatham. Plants of *E. Savileana*, mostly small but full of bloom, came from Mr. May, of Beckenham, Messrs. Fairbairn, of Clapham, and Mr. Hunt. *E. Parmentieri rosea*, a gay kind not seen at former shows, came from Mr. Ayres and Mr. Robertson. Mr. Green had a large *E. Shannoniana*, a very beautiful kind. From Mr. Fraser and Mr. Hunt, were good examples of *E. infundibuliformis*; the latter plant was two and a half feet high, and four feet through. *E. jasminiflora alba*, a very beautiful kind of the swollen-tubed class, was in its perfection; Mr. Green, Mr. Epps, Mr. Fraser, and Mr. Hunt had excellent plants of large size. The rare *E. obbata*, Mr. Hunt had three feet high and as much through; and a smaller plant was sent by Mr. Robertson. A large *E. Aitoniana* was sent by Mr. Dawson; and a good example of *E. togata*, from Messrs. Fairbairn. Mr. May had a large *E. princeps*; and a large *E. Ewerana* came from Mr. Young. *E. retorta*, *retorta major*, *tricolor* and its varieties, *ampullacea*, *eximia*, *ferruginea*, *depressa*, and *gemmaifera*, were shown in a finely bloomed state.

Orchids.—These were numerous, but not so fine as in June, if we except the *Stanhopeas*, which are now getting in flower. There were good plants present of the following species of this beautiful genus:—*Stanhopea insignis*, *tigrina*, and a var., *oculata*, and some vars., *graveolens*, and a var., *quadricornis*, *eburnea*, *venusta*, and *Wardii pallida*; the plants varied with from two to five and six expanded flowers. From Mr. Falconer, of Cheam, were two remarkable plants of *Renan-*

thera coccinea, with many large branching panicles of scarlet flowers. Mr. Bassett had a fine *Aërides odoratum*, with thirty-three bunches of blossom. Mr. Mylam of Wandsworth had a very large mass of *Miltonia spectabilis*, and a *Calanthe Masuca*: the latter was also sent by Messrs. Rollisson, who, in addition, had *Sobralia macrantha*, with two expanded flowers, and a *Sobralia* called *decora*, with small very pale-coloured blossoms; also, *Acineta citrina*, and *Oncidium nebulosum*. *Dendrobium formosum*, and *D. densiflorum*, came from Mr. Mylam; and the pretty little *Camarotis purpurea*, from Mr. Jack of Carshalton. Mr. Beck sent *Anætochilus setaceus*, and *Physurus pictus*, growing in a very ornamental basket manufactured of green slate; the former of these plants has its leaves covered with a delicate net-work of gold on a dark velvet-like ground; the net-work of the other is like silver.

New Plants.—The most remarkable, according to the award of the judges, was a new species of *Ixora* (*Ixora sp.*) from Java, sent by Messrs. Veitch of Exeter: it is in the way of *I. crocata*, but has larger and differently formed ovate lance-shaped leaves; the flowers are also different in form, though similar in colour: it is a good stove shrub. The next award was made to an *Echinocactus*-like plant, (*Echinopsis nov. sp.*) from Bolivia; the flowers are of a beautiful rose-colour, four inches across when fully expanded, and the tube is perhaps six inches long. There were no less than three new species of *Æschynanthus*: one the *Æ. pulchra*, noticed at page 323, and now shown by the same: *Æ. Boschianus*, exhibited by Messrs. Henderson, at the Royal Botanic Society's exhibition, and described at page 368; this was here shown by Messrs. Henderson, and Mr. Jack: and *Æ. Lobbiai* from Java, resembling the last in trailing habit, but in this the flowers are deeper-coloured and hairy, and the calyx tube is of an entire dark lurid chocolate colour; they are all three valuable additions to this gay family. *Clematis glandulosa* was also sent by Messrs. Veitch: this is a robust creeper, with very large cordate lanceolate leaves, and singular-looking flowers, of which the outside is rust-coloured, the inside dark purple, with a tuft of white threads in the centre. Messrs. Veitch again produced the Balsam (*Balsamina latifolia*), mentioned at page 322; it seems to be of marked dwarf habit: also, *Cuphea cordata*, a plant of trailing habit, with scarlet flowers, remarkable for having two petals at the end of the tube-like part of the flower, expanded like wings. Another of this genus, called *Cuphea miniata*, was sent by Mr. Jack; this has oval hairy leaves, and in the flowers, the mouth of the tube-like part is

purple, and the two expanded petals of a vivid crimson. A new *Hoya* (*Hoya sp.*) from East India, was from Messrs. Rollisson; it has oval fleshy leaves, and bunches of small whitish waxy flowers, with a pale-pink centre; not so showy as *H. carnosa*. From Mr. Jackson of Kingston, was a handsome sub-shrubby *Lycopodium*, of very elegant branching habit, much more graceful than *L. stoloniferum*; it was named *Lycopodium cæsius*. From Mr. Robertson, was *Pavetta Borbonica*, a stove shrub with handsome mottled leaves, and red veins. Of novelties placed on the tables, from the Society's collection, were *Achimenes patens*, described at page 316; *Aster Cabulicus*, a hardy shrubby Aster with pale-bluish coloured flowers; and some fine young plants of *Cryptomeria japonica*, a new hardy Conifer, three feet high, and showing a very elegant habit of growth.

Seedlings.—Scarcely any were shown. There were three *Pelargoniums* from Mr. Gaines:—Chieftain, a light-red in the way of Duchess of Leinster; Mary, Queen of Scots, white, with dark upper petals edged with white; and Mrs. Brock, a red of little merit. A certificate of merit was given to a Seedling *Picotee*, shown by Mr. Edmonds, of Wandsworth-road, named Edmonds' Mrs. Reeves; it is a flower of good properties, with a distinct purple-rose edge.

Other objects of a miscellaneous character, deserving of notice, were the following:—A beautiful set of blooms of different varieties of Hollyhocks of almost all shades of colour; these were from Mr. Cole of Bath: they were shown in stands, each single bloom resting on a single leaf. Some fine plants of *Lobelia erinus grandiflora*, and *L. bellidifolia*, forming a dense mass of blooms, about a foot in diameter; these were from Mr. Robinson of Pimlico. There were also three or four collections shown as new hardy Evergreens, which, though consisting in a great measure of plants not very remarkable for novelty, contained many plants of interest. Among these were *Podocarpus taxifolia*, *Taxodium elegantissima*, *T. Harringtonia*, *T. nucifera*, *T. Mackoyi*, *Abies pygmaea*, *Thuja filifolia*, *Cryptomeria japonica*, *Quercus glabra*, *Aucuba japonica aurea*, *Buxus sempervirens latifolia*, *Ilex latifolia*, *I. ciliata*, *Azalea ovata*, a new striped-leaved Irish Ivy, a Balm of Gilead Fir with variegated leaves, and *Berberis cuneatus*. A group of plants of this character from the Society's collection, contained *Pinus Chilgoza*, *Garrya laurifolia*, *Berberis Fortunei*, a very singularly distinct pinnate-leaved species, recently sent by Mr. Fortune from China, and *Euonymus fimbriatus*, a species with large leaves, beautifully, deeply, and evenly serrated.

*Taxus baccata*—the Common Yew.

THE YEW.

BY JAMES GRIGOR.



THIS is the mourner's tree, appropriately stationed beside the dwellings of such as have gone to their "long home." It is endeared to many on this account; and, I think, justly; for though it is rejected and abhorred by many, on account of its gloomy character, the educated and contemplative mind is far from despising it, and rather derives a pleasure from the idea, that it is the faithful, acknowledged, and rightful guardian of our last earthly resting-place.

It is a dense-growing demure object, not without elegance in its spray when minutely examined; but, as a picture, too lumpy. It never waves in the breeze, nor does it display any degree of the light and shade which we observe in the generality of trees, such as the pine, the elm, and the oak; which throw out their branches in horizontal irregular tiers, and consequently present those dark recesses which are so beautiful in such objects. The density of its foliage points it out as a tree admirably adapted for hedges; hence it is found very much employed for sheltering gardens,

and for being clipped into a variety of fanciful figures. Judging from the hedges which still remain in the old gardens throughout England, it would appear, that soon after Evelyn's time, it had been much more extensively planted than it has been during the present century. It is still a favourite in secluded portions of pleasure grounds, where its thick and impervious foliage shuts out the view of surrounding scenes. In our cathedral cities it is almost invariably found of a great age and size; and perhaps there is no tree of which so many extraordinary specimens might be enumerated. Of the age of the Yew in Fortingal churchyard, Perthshire, there is no precise account; but it is believed to have been a flourishing tree at the commencement of the Christian era. The Tytherly Yews are about 500 years old, whilst the age of those at Fountains Abbey is 800 years. Under the window, where I now write, are some goodly Yew trees; but they are chiefly to be noted as it was under their shade the late Sir James Edward Smith, the celebrated botanist, spent a great portion of his leisure time.

It is very singular that so much time and learning should have been expended for the sake of ascertaining why this tree has been, from the earliest times, selected to be planted in churchyards. The reason is plain enough, and admits but of one way of solution, namely, that its sombre hue and perennial foliage point it out as admirably, and best fitted indeed, to decorate the place of the dead. Were it a lively and cheerful-looking tree there might be room for some controversy on the subject; but so long as it remains, plant it where you will, a gloomy and sorrowful object, it is only proper that it should be associated with the mournful silence of the grave. It may not be out of place to observe here, that at present there is a great deal of false taste displayed in planting cemeteries. This will be at once admitted, when it is mentioned that in some of those of recent formation, the Yew appears to have been studiously excluded. This is the more surprising, when it is considered, that the chief charm of the tree consists in its almost singular adaptation for adorning the churchyard, and other scenes of a sorrowful and hallowed description. The Pine, for instance, is a gloomy-looking tree; but, upon seeing it by the grave-yard, no one can help tracing its descent from the mountain top, its native abode, and consequently, it appears there as if it were from home. The Weeping Willow, again, like every other tree of the genus, is occasionally gay, rejoicing in the gale at intervals—a tree of the living and of the bright world, rather than of the land of “deep forgetfulness.” The Poplar, too, though in many respects suited for growing beside graves, is almost continually fluttering, and hence unsuited for situations which are proverbial for stillness. The Yew, therefore, can never with propriety be excluded from situations which it has so long occupied, and which the common suffrages of mankind have proved to be in every way suited for it.

After trying all the usual plans of propagating this tree, I am inclined to give the preference to that of raising them from seeds. Layering is a sure process, but the plants so raised have a tendency to bushiness: those grown from cuttings are alike incapable of forming a leading shoot. It may be remarked, however, that such as are designed for hedges only, have no need for a leader, as it is evident that bushy plants will more readily incorporate themselves into the required form.

Cuttings should be planted in sand, and in a shady place, during the month of August or September; and it is important to cut them off immediately below the previous year's growth, so that a small portion of the wood which is two years old may adhere to each.

They should be made about six inches in length, taking care to trim off the leaves at bottom, so that they may be firmly fixed in the soil. In the course of two years they will be sufficiently rooted to be removed into lines, where they may remain for two years more, when they should be again shifted. The berries of this tree are ripe in the month of November, when they turn to a bright red colour. They should be sown immediately after being gathered; for if treated as haws in a rot-heap, the probability is, that mice and birds will devour them. I saved a large quantity of the berries last autumn, and buried them, as is usually done, in a pit partly exposed to the influence of the weather in order to rot off the pulp which envelopes the seed; but, as already stated, the vermin devoured a great part of them, thus proving, that although the branches and leaves are poisonous, the seeds may be eaten by them with perfect impunity. The soil in which they are sown should be such as will not get hard on the surface. Loose and friable soil, if moderately damp, should if possible be selected.

Civilized nations no longer use the Yew as an instrument of warfare; and though archery meetings are increasing rapidly in England, there are other descriptions of wood more slender and elastic used in the construction of bows, so that its chief use may be said to be as an element in landscape decoration, and for planting in the particular situations already described. It is strictly a sepulchral object, and no one with any consistency would introduce many specimens of it either in a pleasure-ground, or in any situation often resorted to; unless indeed some individuals of a gloomy temperature, absorbed in thought, might like to walk beside it.

THE HOLLYHOCK.

THIS is rapidly improving, and is fairly on its way towards its elevation as a florist's flower; but there have been exhibited at the shops in London, and at exhibitions in the country, a vast number in which there was nothing but the colour to admire. The petals of the Hollyhock are too much of the texture of a Poppy to be at all acceptable without great improvement, and there has not seemed to be any advance among the quantity shown recently at exhibitions. It was noticed last year, that Mr. Barron, of Sadron Walden, had been the most successful of all the raisers, who had hitherto attempted the improvement of this gaudy plant, and there was certainly one quality in the specimens we saw, that was by far the most important of all qualities that could be imparted to this tribe of flowers. He

had succeeded in producing varieties with much thicker petals, and, which is a most important point, those petals of a much finer texture or surface; but, besides this, there was among his choice varieties, some very extraordinary novelties in the way of colour and form; and it was said, that he intended to send them out last year. Whether any went out or not we are unable to say, but those who wished to attain perfection, or to go in advance, could only hope for success, by commencing with the best that had been produced; for it would take years perhaps to emulate a man, who, like Mr. Barron, had already obtained really improved varieties; and considering that he would be going a-head at the same time, nobody could overtake him, even if they began as close to him as his own approved varieties would allow them. It is quite true that he would require something like a price for varieties which he had been for many years engaged in producing; but one had better give five pounds for the best thing there is, than set about endeavouring to get it ourselves by the same means. To produce the thick petalled varieties there is no doubt Mr. Barron had for many years sowed the seeds, and year after year selected the thickest he could find; although the difference may have been almost imperceptible from year to year, very slight improvements will in the course of time become highly important, and compared with the race in the hands of persons who have been doing nothing to improve, the advance would be found extraordinary. Let any one begin now with the best of the varieties they could pick up at a common nursery, and if they were not very choice in their first selection, and very careful in their seed-saving, and continued choice to propagate from, they would be twenty years getting where Mr. Barron has already arrived; whereas, if they had bought the best of his to start with, and saved seed carefully, and from the seedlings produced continued to select the best to save seed from for future improvements, they would be behind but one person, and that would be Mr. Barron himself. However, we do earnestly wish to see this flower encouraged; because we have already seen that a great deal can be done with it, and there is no good reason why it should not be done. We, therefore, propose to give a few hints as to its general culture under the least encouraging circumstances; that is to say, supposing we have to begin with the common nursery varieties, and from these hints the amateur may profit enough to secure an advance, however slowly it may progress. The proper mode of proceeding, to overtake Mr. Barron, or, if you have his sorts, to go a-head of him, would be to save

seed from the thickest petalled flowers, or those with the most extraordinary colours and of the best form. All those with petals that are indented should be avoided if possible; for whole, smooth-edged, well-made petals are what we must fight for, and it is no use to save seed from varieties which are opposed to this in character. All the flimsy poppy-like flowers should be avoided; all those of which the petals are puckered and frilled, give little else than similar varieties, or, at any rate, they rarely give any that have not the same faults. The pods of seed should be allowed to swell and begin to turn brown; but not more than half a dozen should be allowed to remain on. Presuming them to be in bloom, select half a dozen of the best flowers on each plant, and tie bass round them to know them; let all the other flowers be removed as fast as they decay, instead of letting them remain on. If, however, there is any danger of a bad seed-year, more may be left on. When those are turning brown, and before the seeds begin to loosen, let them be gathered and put in a box to ripen, in a dry place exposed to the sun. In the spring, about April, let them be sown thinly on beds four feet wide, and be raked in; or if you have it handy, sift a little loose mould over them. When they come up in May, they must be watered in dry weather, and hand-weeded, as they would otherwise soon be choked, although they are strong growing plants when once fairly started. As soon as they are large enough to remove conveniently let a place be prepared to plant them out in: they should be nine inches apart in the row, and the rows eighteen inches from each other. The ground should be well dug, and dressed with well-rotted dung, or vegetable mould. The plants may then be dibbled in carefully, so that the earth is closed about the roots. Here they remain till they bloom, requiring to be watered until they have firmly rooted into the fresh ground, and even then, if the weather prove dry and parching; they must be regularly weeded, and towards the winter they should be earthed up a little to cover the crowns of the roots well against the winter; although the plant is by no means tender. Early in the next season the bloom will begin to rise, and as their spikes go up the lower buds will open. The instant they open and show themselves begin the work of destruction; do not allow a semi-double variety to bloom a second bud unless there be something very attractive in the colour, or in the thickness of the petal, or the form of it. Pull up all those with thin flimsy petals directly, whether double, or single, or semi-double; for, as the flimsy petal is the worst fault, nothing but an entirely new colour should save the very handsomest among

them. If there be any come single or semi-double, with thick well-made petals, they may be saved to seed from, for they may throw many double ones with similar petals, and that is all we desire. By destroying all that do not exhibit some desirable property in a conspicuous degree, they may be got rid of before they have time to impregnate the better sorts; for which purpose, the plants must be examined daily, and several times a-day, when once they begin to flower; for a score or two will come out in a warm hour, and the sooner they are removed the better. There will be but few left out of hundreds.

Of the few worth saving for some distinct quality, let the half-dozen best flowers seed, because it is desirable to save the season, and begin sowing from the best as early as possible; therefore, when the best flowers begin to open, mark the best six, taking away all others directly both below and above them, and watch the ripening, so that they be not scattered abroad. With regard to the properties of the Hollyhock the following will be enough for the present; we may be more explicit hereafter.

The flower should be round, and the principal or guard petals should be thick, entire on the edges, and lie flat, being free from puckering or frilling.

The centre, which is composed of florets, should form half a ball, and the more it covers the principal or guard petals the better.

These florets should be thick, large, whole on the edges, perfectly free from fringe, or notef, or raggedness all over.

The colour should be dense, instead of watery and transparent or washy as that of the Hollyhock is generally. The more bright and novel the more desirable.

The spike should be close, the flowers touching each other, and tapering from the bottom to the top. The footstalks of the flower being longer at the lower end of the spike than at the upper end.

There is no fixed height for the plant; but the flowers should begin one foot from the ground, and open all at once.

THE VEGETABLE MARROW, AND OTHER GOURDS.

With the exception of the Melon, Cucumber, and Vegetable Marrow, few Cucurbitaceous plants are cultivated in this country, or, if so, chiefly for curiosity or ornament. There are, however, some others worthy of notice even here, whilst their importance in hot climates can hardly be over-estimated.

The *Vegetable Marrow* is supposed to be a variety of the *Cucurbita Melopepo*, the Melon

Pumpkin, or Squash; it attains a considerable size when ripe, measuring about a foot in length, and four or five inches through, being then rather strongly ribbed, although they are not so apparent when young. The fruit are generally used when nearly half-grown, although excellent in all stages, even when ripe, when it is superior to the pumpkin for pies. The flesh when boiled is very tender, mild, and buttery, and no doubt this will always be the sort preferred in English gardens. It was introduced from Persia before 1816.

The other varieties of this plant, called *Squashes* in the United States, are very extensively grown there, both for summer and winter use; they distinguish two classes of them, the Bush and Winter Squashes: the former being grown for summer use, and the latter, as indicated, for winter stores. The varieties are very numerous of the first section, including the *flat bush*, the *long bush*, and the *crooked-necked bush*. These sorts are desirable for small gardens, as they do not run along the ground like the others, but form compact bushes, and are very prolific. Of the winter sorts, there are the *white winter*, the *bell-shaped winter*, the *crook-necked winter*, and many others. Cobbett gives the preference to the flat bush for the summer, and the long white for the winter. In cooking, they require no peeling, but are merely washed clean, and plain boiled for about twenty minutes, or until done. The winter sorts produce much larger fruit than the others; these latter should be gathered as soon as they are large enough for use, in order not to weaken the plants, when some will produce nearly a bushel of Squashes; the very small fruit are said to form a better pickle than Cucumbers.

The *large Gourd* is the *Cucurbita Potira*, the *Potiron jaune* of the French, and is a very strong grower, throwing out shoots twenty and thirty feet long in a few weeks, and producing enormous fruit; it has been grown to the weight of two hundred and twelve pounds the single fruit, in this country. When ripe, the flesh is two or three inches thick, of a yellow or salmon colour, enclosing the seeds, which are stuck round the sides of the central cavity. In a young state, the fruit are very good, used as a Vegetable Marrow, or in soups, but it is too large a grower to be recommended. There are several varieties of it.

Apparently, a variety either of this or of the preceding is the *Concourzelle*, a Vegetable Marrow highly esteemed in France. It is a very rambling grower, and the fruit should be gathered as soon as it is out of flower, or it becomes too large for use; it is then about six inches long, and nearly two through, very tender and delicious.

Varieties of the *Cucurbita Potira* are the

most commonly grown in Turkey, the markets of Constantinople being supplied with them for fully six months in the year. There are several varieties grown, and they are universally used in soups.

The *Pumpkin* is the *Cucurbita Pepo*, a native of the Levant, and introduced to this country about 1570. It is hardly so much grown now as formerly, although Pumpkin-pie may still be occasionally met with. On the Continent it is used in soups, and also boiled and fried. Being much coarser than the Vegetable Marrow, it is not likely to be much grown.

The *Warted Gourd*, or *Squash* (*Cucurbita verrucosa*), is a native of the East, and appears to have been in cultivation since 1658. It is grown in North America, with those before mentioned, under the common name of *squash*, and perhaps some of the *bush* varieties belong to this species.

The *Orange Gourd* (*Cucurbita aurantia*), and the *Pear-shaped Gourd* (*C. pyriformis*), are grown and used like the others in Turkey, although here chiefly used for decorative purposes. Their trivial names well express the shape and appearance of their fruit.

The *Turk's Turban Gourd* (*Cucurbita cidoniformis*) takes its name from the curious shape, and varied colours of its fruit. The old story of its form resulting from planting a Gourd near a Quince tree, when the former immediately assumed the shape of the latter fruit in addition to its own, is a very fanciful origin for it, to say no more. In Turkey it is used in soups like the others.

The *Bottle Gourd* (*Lagenaria vulgaris*) is a native of the East Indies, and appears to have been introduced as early as 1597. This is by some thought to be the Gourd of Jonas, from the rapidity of its growth when well supplied with moisture. There are several varieties, including the *Club Gourd*, the fruit of which sometimes attains a length of six or seven feet, in the East. The Bottle Gourd is one of the most extensively cultivated in the neighbourhood of Constantinople, the young fruit being cut when about the size of useable cucumbers, the inside scooped out, filled up with rice and forced meat, and boiled. Cooked thus it is in great repute with the Turks. The plants are trained so as to form cool arbours, so grateful in a hot climate.

Many other sorts of Gourds, and allied plants, are cultivated in various warm climates; the above are given here because they will all succeed during our summers, treated as tender annuals.

As the cultivation of one species is applicable to all, the following directions are applied generally. As the weather is not usually

warm enough for these plants out of doors until the middle or latter end of May, the seed need not be sown until the first or second week in April. It should be sown in pots filled with light rich soil, and placed in a cucumber frame. The plants should be carefully potted off as soon as the seed leaves expand, singly in small pots, and replaced in a close heat until they begin to grow freely, when they should be topped and gradually hardened off. About the last week in May, plant them out singly, where they are to remain, placing a hand-glass over each, until they are well established, when the glass should be raised on bricks, and the shoots trained regularly out. They are generally allowed to grow as they like, into a confused mass, of plenty of leaves, but few fruit. They are all the better for some thinning and regulating,—though little time can generally be spared for so necessary an operation. At any rate, once well established, they flourish until the frost kills them, or until they are exhausted by bearing. The places generally selected to turn these plants out, is most frequently the top of compost and rotten dung heaps, or old spent hot-beds. The trenches between the asparagus beds are also good situations for some of them. But it is questionable whether the selection of a much poorer soil would not be more productive of profitable results than the above way. If a barren piece of land were chosen, the plants would be much more manageable; and by a judicious application of water, either pure, or with manure in solution, their luxuriance of growth could be checked, and the production of fruit would doubtless be much greater than under the old system.

If the first supply was insufficient, or not likely to last through the season, a sowing out of doors may be made in July, especially of the *squashes*. Even sown as late as August, these latter will come into bearing, and keep on the supply until all are killed by frost. In America they are eaten as turnips, and are by many preferred to that root. If any of these plants are put out in the open quarters, they should have the same summer treatment as other crops, being kept free from weeds, the ground stirred, and they should be well watered in dry weather. These plants are excellent for covering unsightly objects,—as palings, walls, or any odd corner, being easily trained,—especially the smaller fruited sorts,—in any required direction, and in the autumn their fruits make a good display.

Besides the various uses already noticed, and many more which it would be tedious to mention, various kinds afford a valuable addition to sea stores, lasting long after all ordinary vegetables are used up, and forming a grateful addition to the scanty fare of a long voyage.

Yet another use remains to be mentioned,—the young leaves and tender tops form an excellent substitute for spinach, especially in hot seasons when that vegetable is most liable

to fail. No danger need be felt in picking the tops for this purpose, as such a process will make the plants more branching, and increase the quantity of fruits.



Rustic Bridge, in Royal Botanic Society's Garden.

THE ROYAL BOTANIC SOCIETY'S GARDEN, REGENT'S PARK.

THE Royal Botanic Society of London, was founded in 1839, by Royal Charter, granted to the late duke of Norfolk and others, "for the promotion of Botany in its relation to the arts, &c. ; and for the formation of an extensive ornamental and botanical garden, near the metropolis."

The site of ground secured for the carrying out of this project, forms the inner circle of the Regent's Park, formerly known as "Jenkins' Nursery;" and having as such already been brought into a state of cultivation, was so adapted for the carrying out of the objects of the Society. It had been urged that this contiguity to the metropolis would militate against its success, since it would be found impossible to cultivate many tender and delicate plants, in the midst of an atmosphere continually charged in a greater or less degree

with particles of smoke. It must indeed be admitted that there are many plants to which this would apply ; but there are numberless others which can be brought to a considerable degree of perfection, notwithstanding these disadvantages.

Previously to their taking any step towards laying out their gardens, the Council of the Society offered a premium for the best design, adapting the situation, with some existing features, to the objects they had in view : this step produced several designs, none of which were fully approved ; and the plan ultimately adopted, was the joint production of the Society's Architect, Mr. Decimus Burton, and the Curator, Mr. Robert Marnock. The principal parts of the ground have been allotted to the several purposes intended, and part of an extensive iron conservatory and

hothouse has been erected by Mr. Turner, of Dublin. The conservatory, which is to be designated the "winter garden," is ultimately proposed to extend 300 feet in length, and to cover an area of upwards of an acre, the average height of the building not extending much over twenty feet.

The principal objects in this garden, are the conservatory; the several plots of ground devoted to the purposes of science, decoration, and utility; and the broad promenade walk extending across the garden from the entrance in a direct line to the centre of the conservatory. The general features, in an ornamental point of view, comprise a wide expanse of lawn, pleasingly undulated and furnished with clumps of trees and shrubs, a good breadth of ornamental water, and a rustic mound of considerable elevation, about which are several pieces of rustic work, one of which is represented in the sketch at the head of this article. This mound commands a bird's-eye view of nearly the whole of the garden.

The conservatory consists of a series of curved ridges, of twenty-five feet span, supported in the inside by light iron columns; the centre ridge is a span of fifty feet, with a semicircular projecting front. The building is entirely composed of iron and glass, the latter continued down to the ground, the upright sashes of the sides forming a series of folding doors, by which the building may be entered at any point.

The scientific plots, which are situated on the east side of the ground, consist, first, of a garden devoted to such medicinal plants as will grow in the open air, and of which a very extensive collection is cultivated; secondly, a garden in which a large collection of hardy herbaceous plants are planted in irregular beds, according to the "Natural System,"—that of De Candolle, as far as practicable, has been followed; and thirdly, a garden illustrating the "Linnean System," which latter plot contains native plants only, and thus illustrates not only the arrangement of Linnaeus, but the British Flora also. These plots are divided by banks planted with shrubs. On the banks in various parts of the garden, and on the lawn, a tolerably full collection of hardy trees and shrubs is distributed. The ornamental plots, consist of a small oval garden near the principal entrance, devoted to Roses. Near it is another parterre, filled with hyacinths, tulips, narcissus, anemones, and similar plants for early spring flowering; these being succeeded by verbenas, petunias, pelargoniums, heliotropes, calceolarias, and other summer bedding plants. Contiguous to this is another episodal area, planted with American shrubs. Besides these, and to be regarded as objects of utility, there is a plot of ground devoted to

specimens of agricultural plants; and another, in which it is intended to form a full collection of such plants as are useful in arts and manufactures.

Fellows of the Society are admitted by ballot, after being duly proposed and seconded, and in ordinary cases pay an admission fee of five guineas, and an annual subscription of two guineas; or, instead of this, a payment of twenty guineas. Like the Horticultural, (see p. 98,) the Royal Botanic Society holds three floral exhibitions during the London season; and on a similar scale of magnificence. At those held during the present season, the following subjects in the shape of *new* or *rare* plants have been produced:—

Eschynanthus Boschianus, is a stove perennial, with slender drooping branches, small, sharply ovate, fleshy leaves, and proportionally large, curved, tubular scarlet flowers, with an orange throat, and dark lines, profusely produced from the axils of the leaves on single-flowered stalks. A very fine subject shown by Messrs. Henderson, of Pineapple-place.

Torenia asiatica, is an annual stove-plant, of dwarf branching habit, ovate, lance-shaped leaves, and mimulus-like flowers of a peculiar bluish-lilac colour, marked with large deep purple spots. This very beautiful plant was shown by Mr. Smith, gardener at the Holme, Regent's Park.

Cuphea platycentra, a Mexican sub-shrubby plant, with oval-shaped leaves, and tube-like scarlet flowers from their axils; it is a pretty plant for a warm green-house or cool stove, and was shown by Mr. Smith.

Gompholobium Hugelii, a New Holland shrub, of slender growth, with leaves, formed of three small linear leaflets, and yellow butterfly-shaped flowers. A pretty green-house shrub, shown by Messrs. Lucombe and Co., of Exeter.

Gompholobium sp. nova, was sent by Messrs. Lucombe and Co.; it has trifoliate leaves, with linear leaflets, and large crimson flowers, with purple wings, in the way of *G. polymorphum*, but of shrubby habit.

Calystegia pubescens, the double-flowered convolvulus, with pink flowers, sent from China very recently by Mr. Fortune: this was shown by Messrs. Rollißon, of Tooting.

Libertia azurea, an herbaceous frame plant, with sword-shaped leaves, and pale blue iridaceous flowers, borne sparingly on a tall stem: it was shown by Messrs. Henderson.

Chorozema ericoides, a greenhouse shrub, with yellow and red butterfly-shaped flowers: this was shown by Mr. Barnes, gardener at Bromley.

Mussaenda macrophylla, a large growing shrub, with large ovate-acuminate leaves, and

bunches of orange coloured tubular flowers, which, however, soon fade: each bunch of flowers has three large white bracts, which are the most showy part of the plant. It is suitable for a warm conservatory; and was shown by Mr. Ayres, gardener at Brooklands, Blackheath.

Achimenes Leibmanni, a variety—for it can be nothing more—of *grandiflora*, with rather deeper coloured flowers: shown by Messrs. Henderson.

Lobelia sp. said to be from South America, of tall branching habit, with very long lance-shaped leaves, and small deep red flowers, was shown by Mr. Dods, gardener at Cleifden.

Clitoria Ternatea major, a climbing stove plant, with large deep-blue butterfly-shaped flowers, said to come from Sidney, New South Wales; it was shown by Mr. Ayres.

Thysanotis sp. said to be raised from Cape seeds—probably Australian—was shown by Mr. Stanley, gardener at Sidcup; it has purple fringed flowers, and is a pretty greenhouse herbaceous plant.

Pavetta borbonica, is a handsome stove evergreen, with large lance-shaped leaves, mottled with light and dark green, and ornamented by red veins; it was shown by Mr. Robertson, gardener at Ealing Park.

Theophrasta Jussiei, is a stately unbranched stove shrub, with a tuft of evergreen oblong lance-shaped spinous leaves, and heads of dirty white flowers, seldom seen. It is a very rare plant, and was shown by Messrs. Rollisson.

Erythrochiton braziliensis, is a stove shrub, with fine obovate-acuminate leaves, tapering below, and bearing white trumpet-shaped flowers; it was sent by Messrs. Lucombe and Co.

Achimenes argyrostigma: this is sometimes considered a worthless plant. Mr. Dobson, gardener to Mr. Beck of Isleworth, had a fine large tuft of it, nicely flowered, and though not a *showy* plant, it is a very *pretty* one.

Azalea indica, var. *Conqueror*, is a large pale red, well-formed flower: shown by Mr. Barnes.

Erica Swainsonii inflata, is a pretty seedling Heath of Messrs. Rollisson's, with inflated tubular salmon-coloured flowers, with a recurved limb: it is a good variety.

Erica Vernonii superba, is a seedling with white coloured flowers, with an inflated tube, narrow mouth, and spreading limb; it has also a long red calyx, which is conspicuous in contrast with the white of the corolla: a good variety in the way of *Shannoniana*, shown by Messrs. Fairbairn, of Clapham.

Erica Whartoniana, is a seedling with flowers in the way of the last, but more flesh-coloured: it was shown by Messrs. Rollisson.

Erica Crevesiana, is a variety in the way of *ampullacea*, with flesh-coloured flowers.

Erica jasminiflora vittata, is a seedling

with inflated tube-shaped flowers like *jasminiflora*, and delicately streaked with a few pink longitudinal lines; it was shown by Mr. Barnes.

Cereus Allnuttii, is a cross between *C. grandiflorus* and *C. speciosissimus*, partaking of the character of both; the flowers are orange-scarlet, but do not appear to open freely—at least, by day; it was raised and shown by J. Allnutt, Esq., of Clapham.

THE NATURAL ORDER RANUNCULACEÆ.

THE natural order of *Ranunculaceæ*, or the Crowfoot tribe, belongs to the class of polypetalous dicotyledonous plants, having its stamens adhering to the sides of the ovaries, anthers bursting by longitudinal slits, several distinct simple carpels, leaves without stipules, sheathing at the base, and some peculiarities in the seed. Some of the plants, as the *Thalictrums*, are without petals to the flowers; the calyx of *Pæonia* is persistent, not deciduous, as is in general the case.

This order is usually placed first in arrangements of plants by what is called the *Natural System*. Taking a comprehensive view, the plants it contains are of a very suspicious character, for the most part possessing acrid, caustic, and poisonous properties. The caustic is however so volatile, that in most cases either drying of the plant, infusion in water, or boiling, are sufficient to dissipate it; it is neither acid nor alkaline; it is increased by acid, sugar, wine, honey, spirit, &c., and is only effectually destroyed by water.

The principal properties of the plants of this order, which belong to the British Flora, are of the nature which we have already mentioned; in this place it may be worth while to present a brief summary of the qualities of some of the most remarkable plants of the order, whether native or exotic. The roots of some of the perennial species of *Adonis*, are said to possess emmenagogue properties: those of several *Aconitums* are acrid and poisonous in a high degree; the roots of *A. Napellus* have been occasionally mistaken for horse-radish, and productive of serious consequences; those of *A. ferox* are dreadfully poisonous. Several species of *Hellebore* are drastic purgatives. *Pæonia* has acrid bitter roots, which are, however, said to possess antispasmodic qualities: the root of *Hydrastis canadensis* is exceedingly bitter, and used in North America, under the name of Yellow-root, as a tonic: that of *Coptis trifoliata*, or Gold Thread, is also a pure and powerful bitter, and is employed as a popular remedy for aphthous affections of the mouth of children, in the United States: the root of *Anemone Pulsatilla* causes colic and vomiting: a decoction of that of *Clematis dioica* in sea-

water, is a powerful purge in hydropic cases: *Ranunculus Thora* has exceedingly acrid and poisonous roots: the roots of *Actæa spicata* are also antispasmodic and astringent: *Xanthorhiza apiifolia* possesses a very pure tonic bitter property in the wood and bark; an intensely bitter gum and resin are also contained in the plant. Several species of *Ranunculus* are powerfully acrid, producing blisters or ulcers in an hour and a half; and the leaves of *Clematis recta*, *C. vitulba*, and *C. Flammula*, possess similar properties, but not so powerful; those of the two latter plants especially, and of *Ranunculus Flammula* and *R. sceleratus*, are used by the beggars to form artificial ulcers; they lose this property by drying or exposure to heat. In the southern parts of Africa, the leaves of *Knowltonia vesicatoria*, are used as vesicatories. The leaves of *Helleborus fœtidus* are said to be very efficacious as a vermifuge. The leaves and stalks of *Delphinium Consolida* are employed in making some cosmetics, but not without danger; those of several *Aeonitums* are narcotico-acrid poisons. The seeds of many possess very active properties; those of *Pœonia officinalis* are emetic; the fruit of *Actæa* is poisonous; the seeds of *Delphinium Staphisagria* are extremely poisonous, owing that quality to a peculiar alkali called *delphinia*. *Nigella* has aromatic sub-acrid seeds, which have been used instead of pepper.

A good many spices of this order are natives of Britain, and by far the largest portion of the order is found in Europe; indeed the proportion found in Europe has been estimated at one-fifth of the whole order. North America possesses fewer, but still a good number of species, estimated at one-seventh; South America has about one-seventeenth, and India one-twenty-fifth. Some few are found also in Africa and in New Holland. They affect a cool damp climate, and when met with in the tropics, it is on some elevated tracts—the sides or summits of lofty mountains.

It would be out of place here, to enter so far into the question of botanical affinities as to explain minutely what are the distinguishing features between this order and those with which it admits of contrast; it will be sufficient to mention them briefly: the most powerful and close relationship lies in the order *Dilleniaceæ*, *Magnoliseæ*, *Papaveraceæ*, *Nymphæaceæ*, and *Umbellifereæ*: from the first it differs in the want of arillæ, in habit, and in having a deciduous calyx; from the second, in sensible qualities and want of stipules; the third differs in having narcotic instead of acrid properties, and milky, not watery fluids; and the fourth in having concrete carpels; *Umbellifereæ* differ in having the stamens always definite in number, and in

having their calyx united with the ovarum. A more distant relationship exists between the order and *Rosaceæ* and *Sarraceniaceæ*; and some analogy has been traced between it and *Alismaceæ*, an order of *Monocotyledons*.

PRUNING THE DAHLIA.

A LITTLE practice is worth a good deal of theory; and while we leave to others the details as to the probable why and wherefore, we shall simply give a few hints as to the mode we have successfully adopted in the pruning and training of the Dahlia. We believe the practice of many, who cut their plants into mere skeletons, with a notion that the less the root has to do the larger the flowers come, is subsiding a good deal; we have always reprobated it. We have always felt confident that the flowers derive great nourishment from the leaves as well as from the roots, and have always acted on that supposition. We have invariably abstained from cutting off a single branch, unless two were in each other's way, in which case we removed the weakest, or it was coming too weak to bear a strong bloom, in which case it would do no good. It may be taken safely enough as a proved fact, that the less flowers there are permitted to perfect themselves on a branch the stronger the flowers will come, and the more there are the weaker they come, consequently there could be no mistake in thinning the buds; but the Dahlia is monstrously uncertain, and if we reduced the buds as soon as they appeared we might remove those that would come perfect and leave those that would not. It is necessary, therefore, to allow the buds to advance far enough to promise a perfect bloom before we select those we mean to leave, and having made up our minds which afford the best chance of perfection, we may remove all those in the immediate neighbourhood. The benefit of this will be easily seen in the increased size and perfection of those left on the plant. And it is equally important that the instant we find a bloom is coming bad or unfit to show, or the instant it be gone by its perfect state, it should be taken off, because it is weakening the powers of the plant as long as it remains on. The first side shoots from the main stem will all yield large showable flowers, and therefore stakes should be driven to fasten them to as they grow, and they should be fastened so as not to be in each other's way. But when these side shoots throw out their lateral branches they would be too numerous for all to remain on the plant, and therefore such of them as come weakly or can be spared without detriment to the plant, should be taken away while young, and so should all those that sprout out again

near the place they are taken from. As a general rule, besides all these, there is one that should be observed whenever a flower is coming fine ; it is, to take off the end of the branch it is on, to prevent any growth beyond it, for that would weaken the flower a good deal. Besides this mode of treatment being good for the flowers coming on, it strengthens the plant for succeeding blooms. The only difference to make in case of the plant being wanted for a garden ornament, is to leave on more flower buds, but let them be all placed at equal distances.

THE XERANTHEMUM—EVERLASTING OR ETERNAL FLOWER.

THERE was a time when these flowers were valued highly on account of their lasting qualities, it being well known that they will retain their form and colour for years after they are gathered and hung up. The great variety of hard or horny petalled flowers that now form the English winter nosegays have become quite an article of commerce, and the natural variety is greatly increased by artificial colouring. Nevertheless without these helps, there are several very pretty kinds which are easily cultivated, and serve well to enliven the flower-vases and cups in the depth of winter. There are several varieties and species, and all of them useful and good. Miller mentions six species : *Xeranthemum annuum*, *X. inapertum*, *X. orientale*, *X. speciosissimum*, *X. retortum*, and *X. sesamoides*. Of the first, there are purple and white, single and double, and these have been grown a good deal in England. The fourth sort bears a large yellow flower, and rises with a shrubby stalk three or four feet high ; the colour of this kind is very bright, and the flowers are very showy and brilliant ; but they are not produced very numerously. The culture of these plants is simple. The seeds are sown, like other annuals, on a slight hot-bed in spring, and when they are up they are watered and kept clear of weeds until they are large enough to pot or plant out. They may be planted out in the common borders or on beds, a foot apart at the least, and then left to bloom ; or as they are capable of being brought forward in bloom they may be sown in autumn and potted like ten-week stocks, and kept in frames over the winter. They will then flower much earlier and stronger, and thus grow, as stocks do, two complete seasons ; the flowers should be gathered while perfectly bright and soon after they are opened ; if they remain long in bloom the seeds begin to swell, and the flower will in a few months come to pieces ; but if gathered when young, they continue whole and quite brilliant for years. All the sorts will grow in the open

air in the summer time, and will succeed with the treatment of most tender annuals, though some of them are far from tender. They are from various countries : for instance, *X. annuum* is from Austria, *X. inapertum* is from Italy, *X. orientale* is from the Levant, *X. speciosissimum* is from the Cape of Good Hope, so also is *X. retortum*, and *X. sesamoides*. Seeds may be had both of English growth and imported ; and a few should always be sown in a garden of any size, for keeping, when dry, if not for the sake of their present appearance. The Cape species require to be grown in a green-house, and only succeed well with very careful treatment, though they do not require to be kept very close. With regard to the dyeing process, it, in our opinion, converts the real to an artificial flower ; while retaining its colour and the natural form it is curious, but the instant the strong colouring is upon it the charm is gone, and gay as the novelty may appear we might as well put up with the regular artificial flowers of cloth and paper, for they would look more natural whether they were so or not.

THE ACONITE, MONKSHOOD, OR WOLFSBANE.

THIS is a popular herbaceous plant, found in most gardens, growing freely in all kinds of soil, and requiring little or no care in culture. It is a rank poison, and is on that account discouraged in gardens where there are families, because so small a quantity is fatal that the juice of the plant, when bruised, if it were accidentally rubbed against a wound would seriously afflict, if not cause death. Indeed the ancients used to poison their darts with the juice of this plant to insure the death of the victim. Miller numbers ten species ; namely, *A. lycoctonum*, with yellow flowers ; *A. altissimum*, with yellow flowers ; *A. variegatum*, with blue flowers ; *A. Anthora*, with yellow flowers ; *A. Napellus*, with blue flowers ; *A. pyramidale*, the common blue Monkshood ; *A. alpinum*, with blue flowers ; *A. pyrenaicum*, with yellow flowers ; *A. Cammarum*, and *A. orientale*, with white flowers ; all these are more or less ornamental, but *A. pyramidale* is the principal garden species. It propagates easily from the parting of the root, and it also seeds freely. There is a garden variety with blue and white striped or mottled flowers ; a very showy dwarf and highly ornamental plant, desirable in even choice borders, whereas the coarse kind is only fit for the back portions of wide borders, for the sake of its long spikes of purple flowers. The variegated kind may be grown about in front of the borders, forming, as it does, a pretty dwarf plant with a good share of bloom, and that bloom bright and pretty. When the leaves begin to turn yellow

the plant may be dug up and the root parted into as many as you require, or as many as it will make, according to your wants, and the capacity of the root to meet such wants; for instance, if you greatly want increase, make as many pieces as you can so as you have a heart to each piece. These will take two or three seasons to get to any size; but if the object be merely to increase a little, it is better to part the root into only two or three pieces, and so preserve them large enough to bloom directly. In this case they may be planted at once where they are to bloom. In case of propagating them as much as possible, and parting them into small pieces, a bed should be made of good rich kitchen garden soil, and the pieces should be planted six inches apart in the rows, and the rows a foot from each other. Here as they grow or spring the weeds should be cleared away and the bed be kept clean; and they may remain on this bed one, two, or three seasons, according to the size you wish them to attain before you plant them out for ornament. In dry parching weather they will require watering while young, and they should be looked to all the while they are making their growth, for a check for want of moisture would make about a season difference in the growth. The planting out where they should bloom should be done just as the leaves die off to a yellow colour, when they may be placed in the regular borders or blooming beds, and labels should be placed by them with their names.

THE EGG PLANT.

THE fruit of the Egg plant (*Solanum Melongenaesculentum*) is extensively grown in tropical climates for kitchen use, and is also much used in France and in various other parts of Europe for similar purposes. About Montpellier it is extensively grown, being used by rich and poor—from the middle of summer till the end of October. The varieties are known in France under the appellation of *Aubergine*, and in the East Indies as *Bringalls*. Although long known on the continent, it is doubtful if they were introduced to this country before 1815, and then, perhaps, only as curiosities.

Although numerous varieties exist in the East and West Indies, the two best known in this country are the Round Purple, and the Long Purple Egg plants. These must not be confounded with the White Egg plant, (*Solanum Melongena*), frequently grown as an ornamental tender annual, and unfit for culinary purposes. The esculent egg plants attain a height of about three feet, with large downy leaves, and large pale purple flowers. The branches, leaves, and calyx are also slightly spiny. The fruit of the round variety is of an obovate shape, about four inches long and three inches through, of a deep purple colour

when ripe. The long variety produces fruit from five to eight inches in length, a little club-shaped, and generally slightly bent, and assuming a deep purple colour as it ripens. Both sorts vary in the colouring of the fruit, the last more so than the round.

The culture of these plants is similar to that of other tender annuals, but where the fruit are wanted in the greatest perfection, it is better to devote a pit or frame purposely to them. For this purpose a good hot-bed should be prepared in February, and the seeds sown in pots, and when two or three inches high potted off into five-inch pots, one plant in a pot, and kept in a good heat, and well attended to for water. When the pots become full of roots they should be turned out into a pit or frame, in which a foot of very rich, light compost has been prepared, three feet below the glass. The plants should be placed at a foot apart, well watered, and the frames kept close and shaded for a day or two until the roots begin to take hold of the new soil. Afterwards, a high temperature, and plenty of air to prevent drawing the plants up weakly, should be given them; and they should also be abundantly watered, sprinkling them at night, when shutting up, as a preventive of the red spider, to the attacks of which they are very liable. As the plants advance they should be gradually inured to the open air; and when they reach the glass the lights may be entirely removed. Copious waterings must still be continued, and the plants will advance rapidly to perfection. Under this management each plant will produce from six to ten fine fruit.

Where this plan is considered too much trouble, they may be raised in heat and potted off as recommended, and afterwards turned out against a south or west wall, in light rich soil, and attended too well with water, being kept neatly nailed to the wall. In such a situation they will do very well.

In the East Indies, especially at Bombay, they are extensively used in curries and made dishes, but the best and most usual method of dressing them is, first, to parboil them, then divide them lengthways, score them across and across with a knife, dress them with butter, pepper, and salt, and broil them on a gridiron. Another method is to split the fruit lengthways into three pieces, score them, and well rub them with salt, and set them to drain for two or three hours, in order to get rid of a bitter taste which, otherwise, would render them unpalatable; then pepper, and fry in butter with bread crumbs. Cooked in either of these ways, they make a very palatable dish. In Turkey they are very extensively used in soups and other dishes; several varieties, if not distinct species, being cultivated for these purposes.

*Weigela rosea.*

WEIGELA ROSEA.

(Lindley.)

THE ROSE-COLOURED WEIGELA.

This plant is described at p. 127 as a shrub resembling a *Philadelphus*, with opposite elliptical leaves, and axillary and terminal flowers, three or four springing from each axil or end of the shoot: the flowers are moreover stated to be rose-coloured outside, and white internally, an inch long, and something more in diameter when expanded. Such a description raised the expectation that it would prove to be a beautiful subject, and those who entertained this hope have not been disappointed now that the Horticultural Society, in the last part of their *Journal* (July 1845) have published a coloured figure of the plant. To this source we are indebted for the opportunity of giving the accompanying engraving, from which a pretty good idea of the general character of the plant may be formed.

In the *Journal* just referred to, Mr. Fortune, who was happy in discovering this

plant while in China, and by whom it was sent to this country, gives the following particulars respecting it, additional to what was stated at p. 127:—

“When I first discovered this beautiful plant it was growing in a mandarin’s garden on the island of Chusan, and literally loaded with its fine rose-coloured flowers, which hung in graceful bunches from the axils of the leaves and the ends of the branches. The garden, which was an excellent specimen of the peculiar style so much admired by the Chinese in the north, was often visited by the officers of the regiments who were quartered at Tinghae, and was generally called the Grotto, on account of the pretty rock-work with which it was ornamented. Every one saw and admired the beautiful *Weigela*, which was also a great favourite with the old gentleman to whom the place belonged. I imme-

diately marked it as one of the finest plants of Northern China, and determined to send plants of it home in every ship until I should hear of its safe arrival.

"All the gardens of the mandarins in the north of China are small, and as there is only room for a few plants, these are always of the most select and handsome description. Amongst my collections are several other plants which are common in these gardens, all of which are of great beauty and interest. Azaleas, Roses, Moutans, *Glycine sinensis alba*, *Viburnums* (more handsome than our common Gueldres rose), and various other free-flowering shrubs, make these gardens extremely gay, particularly during the spring and early summer months.

"*Weigela rosea* is unknown in the southern provinces of China, and therefore I have every reason to suppose that it will prove hardy, or nearly so, in England; but, if not, it will make a first-rate green-house plant, and will take its place by the side of the beautiful Azaleas and Camellias of its own country. I never met with it in a wild state on the Chinese hills, and it is therefore just possible that it may have been originally introduced to China from Japan: this, however, is only conjecture. In the north of China, where the plant is found, the thermometer sometimes sinks within a few degrees of zero, and the country is frequently covered with snow, and yet in these circumstances it sustains no injury.

"As this shrub has been liberally distributed amongst the Fellows of the Horticultural Society, some remarks upon its habits and cultivation will probably be acceptable. It forms a neat middle-sized bush, not unlike a *Philadelphus* in habit, deciduous in winter, and flowers in the months of April and May. One great recommendation to it is, that it is a plant of the easiest cultivation. Cuttings strike readily any time during the spring or summer months, with ordinary attention; and the plant itself grows well in any common garden-soil. It should be grown in this country as it is in China, not tied up in that formal unnatural way in which we frequently see plants which are brought to our exhibitions, but a main stem or two chosen for leaders, which in their turn throw out branches from their sides, and then, when the plant comes into bloom, the branches, which are loaded with beautiful flowers, hang down in graceful and natural festoons. It was a plant of this kind which I have already noticed as growing in the grotto-garden on the island of Chusan; and I doubt not that plants of equal beauty will soon be produced in our gardens in England.

"The possessors of *Weigela rosea* had better give it some slight protection during the next

winter, by keeping it either in a green-house or frame until duplicates are made, when these can be planted out in the open air. The main object should be to enable the plant to ripen its wood well, for when this is done it will not only be more hardy, but it will also flower better in the following season.

"Its capability of standing out our English winters will be shown in the Garden of the Horticultural Society next winter; but whether it prove itself a hardy or a green-house plant, it is without doubt one of the finest shrubs which have been introduced to this country of late years."

Whether this *Weigela* proves to be a hardy plant, as anticipated, or not, it will certainly prove an acquisition in two points of view. If not hardy enough to endure our climate when planted out fully exposed, it will certainly thrive against a conservative wall; and, as a forcing shrub, there can be no doubt that it will soon be brought into very extensive cultivation. From its habit, it also appears likely to be suitable—which all plants are not—for being grown during the winter season for furnishing cut flowers.

The genus *Weigela*, constituted by Thunberg, belongs to the natural order *Caprifoliaceæ*, or the Honeysuckle tribe (the *Caprifoliæ* of Lindley in his *Vegetable Kingdom*), and is closely related to *Diervilla*, from which modern botanists have doubted its distinctness. Now, however, that good materials have been submitted to examination, it is found to be sufficiently distinct for practical purposes. One point of difference, most obvious to casual observers, though not the most important in a botanical point of view, is that in *Diervilla* the corolla is *irregular*, and *gibbous on one side* at the base, while in *Weigela* it is *regular*, and *equal-sided* at the base. Both have one celled ovaries "cut into four false cells by the projection of a pair of double placentæ, which do not unite in their axis," double capitate stigmas, and remarkable epigynous* glands: in *Weigela* this *gland* is *free*; in *Diervilla* it *adheres to the corolla*.

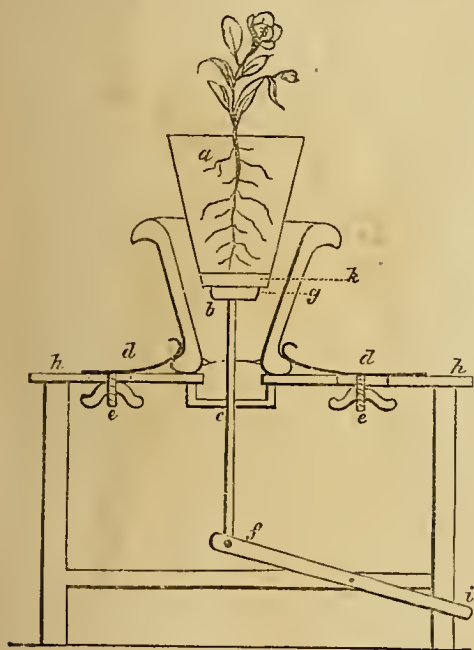
MR. SAUL'S APPLICATION OF MECHANICAL POWER IN POTTING PLANTS.

It has always been felt to be a matter of difficulty to remove large plants from the pots they have been growing in, when it is required to place them in others still larger. The weight of a bushel of soil, interwoven with roots, is such that in moving it in any way, considerable force must be applied; and it is very difficult to apply this force without doing some injury to the young fibrous roots,

* Epigynous, means growing upon the summit of the ovary, or incipient seed-vessel.

with which the outer surface of this mass of earth should be more or less enveloped. In the case of small plants it is usual to invert the pot and plant, to slip the stem of the latter between the fingers, allowing the ball of earth when liberated from the pot to rest on the hand; it can then be taken in both hands, and moved about as may be required. Up to a certain point this is convenient enough, but when the lump of earth and roots is large and heavy, the difficulty referred to begins to be felt.

As a remedy for this, in connexion with other points requiring some improvement, the West Kent garden pot, described and figured at p. 229, was designed, and it is now manufactured for sale. Mr. Saul, of Garstang, has varied, and to some extent improved this design, at least so far as relates to its mode of application. What Mr. Saul proposes will be understood by the following engraving and



REFERENCE.

- a. Soil and roots.
- b. Flower-pot.
- c. Aperture in potting bench, through which the perpendicular part of the lever passes.
- d. Springs.
- e. Thumb screws.
- f. Horizontal part of the lever, the foot being applied at t.
- g. Top of the upright part of the lever.
- h. Potting bench.
- k. Artificial bottom of flower-pot.

description, for which we are indebted to the *United Gardener's and Land Steward's Journal*. It should be premised that Mr. Saul had some years ago designed a pot, which he describes as being in some respects

similar to that contrived by Mr. Fry. Speaking of this, he says,—

"I have still further improved my flower pot, by the application of mechanical power. The accompanying sketch will show in what this consists. I have a rim made at the bottom of the pot on the outside; on the potting bench I have placed two sliding springs, under the ends of which the projecting part of the bottom of the pot is easily adjusted; and the springs are then fixed by thumb-screws placed beneath the bench. The pot is thus held quite firmly, while by means of the lever, the plant is raised out of the pot. The lever being worked by the foot, both hands are of course at liberty to take hold of and secure the plant, with its mass of earth and roots. This is a great advantage in practice. The springs are easily moved to suit pots of any size, by means of the thumb-screws. This differs from anything I have seen published, and is simple and easy of application. By a slight inspection of the figure, I think it will be clearly understood by all."

In removing very large plants from one pot to another, the advantage of having both hands at liberty, while the lever worked by the foot moves the mass of earth, is considerable, and it is also so obvious as to require merely pointing out. The only difference of importance between this pot and the West Kent pot, consists in the greater thickness of the lower rim in the former, which is provided to give increased power to the springs by which the pot is held against the lever.

These two contrivances are not only useful as regards potting plants; it often happens, that with large plants in pots—those especially which have fine hair-like roots, and are planted in peat soil, such as heaths—it is very difficult to ascertain whether they actually require water; and a very great number of plants die in consequence of drought, while to all appearance—judging from the surface of the soil—the roots are moist enough. In fact, this extreme drought, which is often unsuspected, proves fatal to the life of most plants in pots, and destructive of the vigour and beauty of all. It is, therefore, of the utmost importance in the culture of plants, to prevent the soil from getting dry: it is also important to prevent its getting too wet, but this is not so likely to be unobserved as the other. Now it is in affording means for examining the soil with facility, in order to prevent this state of things, that much of the merit of both these contrivances consists; and here again—especially in the case of the larger subjects—increased facility attaches to Mr. Saul's plan.

We therefore feel no hesitation in recommending amateurs to have their potting

tables or benches fitted with this contrivance, and to use one or the other of these kinds of pots for all their large plants. For though the advantages to cultivators of employing these agents are considerable, yet from the force of habit in overcoming difficulties of this nature, they are less important to them, than to those amateurs who are not so well skilled in practical floriculture.

NEW PLANTS IN THE HORTICULTURAL SOCIETY'S GARDEN.

FROM the *Journal of the Horticultural Society*, we take the following particulars respecting some of the new subjects which have been introduced to their gardens, at Chiswick:—

Azalea ovata, (ovate-leaved Azalea.)—Among the early despatches from Mr. Fortune, was received a drawing of this beautiful shrub, which, according to the Chinese artist, has most delicate pink flowers, of the size and form of the Davurian Rhododendron, growing in clusters at the end of the branches. The original plants did not survive the voyage; but a packet of seed has furnished an abundance of young plants, which have been distributed extensively to the Fellows of the Society under the name of “Azalea 274.” The dried specimens received from Mr. Fortune enable the species to be positively determined. It is entirely different in foliage from all the other Chinese Azaleas; for instead of the pale-green colour and abundant hairs which characterise them all, this has perfectly hairless leaves, unless in the seedling state, and they are of a very dark green. Their form, too, is quite distinct; for instead of tapering gradually to the stalk they are abruptly ovate, or even in some cases almost heart-shaped. The plant has been too recently acquired for any knowledge of its true habits to have been gained: but seedlings in the open air have borne the frost of last autumn, and it was considerable on two occasions, without having suffered in the least; and if, as seems probable, the plant should not be inclined to push early, it will not only be a hardy evergreen, but one of the finest in the country. There are two varieties, the one with white, the other with pink, or lilac flowers, both spotted and very beautiful.—*Chusan, Mr. Fortune.*

Azalea obtusa, (blunt-leaved Azalea.)—This charming shrub may be regarded as the gayest of all the red Chinese Azaleas in cultivation. It is a little bush, with very blunt leaves, both smaller and narrower in proportion than we find upon the species already in our gardens, and also with smaller flowers, of the most glowing red. The latter have uniformly

five stamens only, the characteristic mark of the genus Azalea, and thus seem to show that the additional number hitherto remarked in the Chinese species is a mere result of cultivation. The segments of the corolla are nearly oval and sharp-pointed; the upper one is not much smaller than the others, and is faintly blotched with purple. Its high northern latitude would seem to indicate that this plant may be hardy, but it has hitherto been treated as a green-house shrub. It will doubtless prove to be very useful, in consequence of its being a free flowerer, and of a dwarf habit.—*Shanghai, Mr. Fortune, July, 1844.*

Azalea squamata, (scaly-sheathed Azalea.)—With the habit common to all the Chinese Azaleas this presents the following peculiarities:—In its natural state it blooms without leaves, producing at the end of every little shoot one or two large flowers of a clear rose-colour, distinctly spotted with crimson on one side, and guarded at the base by a large sheath of bright brown scales (whence its name). Its calyx, unlike that of the neighbouring species, is reduced to a mere five-toothed rim. Its ovary, immediately after the fall of the corolla, projects in the form of an oblong body quite covered with coarse brown hairs. The leaves when young are somewhat like those of *A. indica*, and have nothing distinctive in their shape or surface; but when old they are oval, sharp at each end, perfectly hairless, and as even on the upper surface as those of *Rhododendron punctatum*. The plant has been long known from dried specimens and drawings sent from China by Mr. Reeves, the latter of which are preserved in the library of the Society: but it has never before been introduced alive. At present its flowers have only been produced by plants out of health, and therefore they have given no just idea of the beauty of the plant, which is one of the finest in cultivation. This species will scarcely prove hardy. In a case, containing several plants, Mr. Fortune sent home a portion of the soil, *brown loam*, in which it was found growing wild, and for the purpose of trying its effects one plant was potted in it; but it has by no means the healthy appearance of those potted in rough sandy peat. It strikes freely from cuttings of young wood under ordinary treatment. The beautiful spotted flowers and neat foliage, together with a dwarf habit, will render this a plant of considerable importance.—*Mountains of Hong Kong, Mr. Fortune.*

Berberis Fortunei, (Mr. Fortune's Berberry.)—At present we know of but one pinnated Berberry from the north-east of Asia, a plant called by Thunberg an *Ilex*, and reduced to the false genus *Mahonia* by De Candolle. Mr. Fortune has added another, which seems

to be quite unlike the *B. japonica* in the form of its leaflets, for Thunberg describes them in the latter as being ovate and but an inch and half long, whereas in this they are narrowly lanceolate, and fully four inches long. It is obvious also that the details of the inflorescence of the two are very different. This species forms a deep green smooth bush, with from three to four pairs of leaflets, and an odd one to each leaf. The leaflets are about four inches long, narrowly lanceolate, acuminate, with shallow distinct spiny serratures. The veins are scarcely visible on the upper side, and very slightly prominent on the under. As the plant only reached the garden in April last, no flowers have been seen; but it appears from Mr. Fortune's dried specimens, that they appear in terminal panicle racemes less than half the length of the leaflets. The flowers are small, closely arranged, and of a yellow colour. Mr. Fortune has furnished the following memorandum concerning it:—"This species is an evergreen bush, with pretty pinnated and serrated leaves of a dark green colour, and grows generally from two to four feet high in the north of China, where it flowers in the autumn months. It produces its flowers both from the points of the young shoots and from the sides of the old stems; the spikes are short, generally six or seven together, and the colour of the flowers is yellow, which contrasts well with the deep green leaves. It was found in a nursery garden near the city of Shanghai, in the north of China. In all probability it is an inhabitant of those provinces which are several degrees farther north than Keangsoo, in which Shanghai is situated, for it is extremely rare in this part of China, and evidently not indigenous to it. If this be the case, there can be little doubt that it will be perfectly hardy in Europe, and will be a very nice addition to our collections of hardy evergreens. It will grow well enough in any common garden soil, and I dare say will be found to be easily propagated either by cuttings or layers. It will be a good plant for a rock work, or for a small neat garden where large straggling shrubs are unsuitable."

Campanula nobilis, (noble Bellwort).—The root-leaves of this fine herbaceous plant are deeply heart-shaped, of a bright pale-green, and placed on footstalks from six to nine inches long, forming a large tuft. From among them, and to rather more than twice their height, rises the flowering stem, which branches a little at the bottom, and bears upon its divisions several fine nodding flowers, which seem to be the largest yet seen among the genus *Campanula*. They are something like those of *Canarina*, nearly three inches long, and one and a half in diameter. The

corolla is pale purple on the outside, and nearly smooth, but paler within, abundantly sprinkled with bright purple dots, and closely covered with long delicate horizontal hairs. It is allied to the Canterbury Bell (*Campanula medium*), and like it has a calyx furnished with reflexed appendages; but its stigma is trifid, on which account it more nearly approaches the Sarmatian and Dotted Bellworts (*C. sarmatica* and *punctata*). It is, however, perfectly distinct, and a grand addition to handsome hardy herbaceous plants. Hitherto it has been treated as a green-house plant, but Mr. Fortune is of opinion that it will prove hardy. It grows freely in rough sandy peat, and, like most of the species of *Campanula*, requires an ample supply of water during the spring months. It may be abundantly multiplied by dividing its roots, and possibly from seeds also.—*Chusan and Shanghai, sent in May, and June, 1844, by Mr. Fortune.*

Clematis hexasepala, (six sepalled Clematis.)—This is a little twining plant, with shining nearly smooth ternate or biternate leaves, whose petioles twine round any small body with which they may come in contact. The leaflets are cordate-ovate, coarsely serrated, and often three-lobed. The flowers are small, pale green, very sweet scented, and appear in threes and fours from the axils of the leaves. Their stalks are long and hairy, and each has a pair of small bracts below the middle. The sepals are very uniformly six in number, of a narrowly oblong form, and spreading so as to form a small green star. Contrary to the usual structure of the genus, the stamens are constantly six only in number, and about half as long as the sepals. The late Mr. Allan Cunningham gathered it in the northern island of New Zealand, but it was first found by Sir Joseph Banks in 1769, and a drawing of it is said to be preserved in the Banksian Library. It is a hardy green-house plant, requiring a light loamy soil to grow in, and is easily increased by cuttings of the half-ripened wood. It only requires the protection of a cold pit or frame during winter, and flowers abundantly in April. Although its blossoms are green and inconspicuous, it is far from an unimportant species, on account of its blooming freely, and being very sweet scented.

Daphne Fortunei, (Mr. Fortune's Daphne.)—This is a small downy-branched bush, with thin deciduous opposite and alternate ovate-oblong and oblong leaves covered with very soft fine hairs. The flowers, which appeared for the first time in January, 1846, are pale bluish lilac, arranged in clusters of four upon branches scarcely beginning to put forth their leaves. They are rather more than an inch long, covered externally with soft, closely-

pressed hairs, and divided in the border into four roundish, oblong, obtuse, uneven lobes, of which the two inner are the smallest. In the inside of the tube of the calyx are eight nearly sessile stamens in two rows, with narrow sharp-pointed anthers. The ovary is smooth, stalked, one-celled, with a small fleshy scale at its base, and a single suspended ovule: it produces abruptly from its summit a very short cylindrical style, ended by a capitate hairy stigma. No species yet described approaches very nearly to this, which has been named after its enterprising discoverer. The seeds being unknown, it can only be conjectured that it belongs to the *Mezereum* division of the genus. It is a green-house, or perhaps half-hardy shrub, and grows freely in a mixture of sandy loam and peat. During summer an ample supply of water should be given, and air at all times when the weather is favourable. In winter it must be kept quite cool, in an airy part of the house; and being deciduous, very little water will be required during the absence of its leaves. It may be propagated by cuttings of half-ripe wood under ordinary treatment. It is a charming addition to our green-house plants, more especially since it appears to be well adapted for forcing.—*Chusan Hills, Ningpo and Shanghai, Mr. Fortune, July, 1844.*

Deutzia staminea, (wing stamened *Deutzia*.)—It is stated by Dr. Wallich that this plant grows on the highest mountains of the great valley of Nepal, and in the province of Kamaon. Dr. Royle speaks of it as being common in Mussooree, and apparently well suited to English shrubberies. It is a small bush with deciduous ovate-lanceolate stalked leaves, finely serrated, dull-green and smooth on the upper side, whitish beneath. The flowers are pure white, somewhat larger than those of hawthorn, in terminal corymbose panicles. The calyx is small, white, with five small triangular teeth. The petals are oblong, and rather crumpled. The stamens have large winged edges produced upwards into a strong tooth. The whole plant has a feeble, somewhat balsamic smell. It is a small hardy shrub, growing well in the common garden soil, and easily increased by cuttings of the half-ripened slender young wood; is very pretty and flowers freely in May.—*Raised from seed in 1841, from the Himalayas.*

Dielytra spectabilis, (showy *Dielytra*.)—This plant, which is beyond all comparison the handsomest of the natural order of Fumeworts, was first made known to Europeans by the Russo-Siberian De Karamyschew, who, studying at Upsal, communicated it to Linnæus. It does not, however, appear to have been seen alive until Mr. Fortune found it culti-

vated by the Chinese, and brought it home with him. When in good health its stems grow one foot and a half high, and have three or four axillary racemes of beautiful flowers, each raceme being from four to six inches long. The flowers are a full inch long, and nearly three quarters of an inch wide, with the two saccate petals of a delicate rose-colour, and the intervening projecting narrow ones white with a purple tip. It is to be expected that the plant will be hardy like the others of its race, but too little is yet known of its habits.—*Gardens in the North of China, Mr. Fortune.*

Edgeworthia chrysantha, (golden-flowered *Edgeworthia*.)—This is a dwarf soft-wooded shrub, throwing up rod-like dull green stems from its base, and bearing the leaves exclusively near their ends. The leaves are about eight or nine inches long, oblong-lanceolate, stalked, very dull green, and covered with fine hairs, so small and closely pressed to the surface that the naked eye fails to discern them. The flowers have not yet been produced in England; but Mr. Fortune's Chinese drawings and specimens show them to be bright golden yellow, something less than an inch long, covered with exceedingly thick hair on the outside, and collected into balls about two inches in diameter at the ends of the shoots. He adds, that they are sweet-scented, and appear in *Chusan* in July. The limb of the calyx is divided into four smooth ovate obtuse lobes; the tube contains eight sessile stamens, arranged in two lines, and with the anthers turned inwards. The ovary is covered with thick hairs, oblique, one-celled, with one suspended ovule, and a little emarginate scale on the upper side of its base. Its style is thread-shaped, and loses itself in a subulate stigma. The species is allied to *Edgeworthia* (or *Daphne*) *Gardneri*, a Nepal plant with a similar habit, from which it differs in having longer and more slender flowers, larger flower-heads, and a much more silky hairiness on the outside of the flower. It is a green-house or half-hardy shrub; it grows freely in a compost of three parts sandy loam, and one of turfy peat. A free drainage is necessary; for although it requires an ample supply of water during the summer months, it is liable to damp off if this point is not properly attended to. For a few weeks in winter very little water is required. It will probably be multiplied without difficulty from cuttings of young wood. Being sweet-scented and a plant of free growth, it may be expected to prove a useful addition to our green-house or half-hardy plants belonging to the natural order of Daphnads.—*Chusan, Mr. Fortune, April, 1845.*

Forsythia viridissima, (green *Forsythia*.)—

A bush with a very rich green colour, and handsome foliage, looking something like a Viburnum, was received from Mr. Fortune some time before he returned from his mission; but in the absence of flowers it could not be determined. Dried specimens have now supplied the deficiency, and proved it to be a new species of the genus Forsythia, of which one only, the Forsythia suspensa, had been previously known to botanists. The species obtained by Mr. Fortune is very distinct from the original Forsythia. Its leaves do not appear even to be pinnated, and instead of having an ovate form, they are strictly oblong, or oblong lanceolate. The branches are four-cornered instead of being terete, and are perfectly erect. The calyx is shorter and more membranous, and the flowers are smaller. It is no doubt a very different plant, and may be expected to become a great favourite when the specimens in the garden are old enough to flower; for then the branches will be found to be loaded, before the leaves, with yellow flowers as large as those of Chimonanthus grandiflorus. In its present state it forms a compact deep green bush, with oblong opposite leaves serrated near the point, but perfectly free from indentations below the middle. They emit a slight balsamic odour, and from their smoothness, want of lustre, and deep rich tint, are very handsome. Hitherto the shrub has been treated as a green-house plant; but it looks as if it might be hardy, at least in situations where the wood can be made to ripen. The following are Mr. Fortune's observations on this species:—"This is a deciduous shrub with very dark green leaves, which are prettily serrated at the margin. It grows about eight or ten feet high in the north of China, and sheds its leaves in autumn. It then remains dormant, like any of the deciduous shrubs of Europe, but is remarkable for the number of large prominent buds which are scattered along the young stems produced the summer before. Early in spring these buds, which are flower-buds, gradually unfold themselves, and present a profusion of bright yellow blossoms all over the shrub, which is highly ornamental. I first discovered it growing in the same garden with Wiegela rosea. Like the Wiegela it is a great favourite with the Chinese, and is generally grown in all the gardens of the rich in the north of China. I afterwards found it wild amongst the mountains of the interior in the province of Chekiang, where I thought it even more ornamental in its natural state among the hedges than when cultivated in the fairy gardens of the mandarins. In England it is probable that it will be nearly hardy, but I advise the possessors of it in the first place to keep it in the green-house, and to plant it on the conservative wall, until its constitution is

proved in the garden of the Society next winter. It is a free growing bush, and is easily increased by cuttings or layers."—*North of China, Mr. Fortune.*

Fortunæa chinensis, (Chinese Fortunæa).—An empty cone of this singular plant was received some years ago from Dr. Cantor, by favour of Lord Auckland, then Governor-General of India; and it was at that time supposed to belong to some unknown conifer. Mr. Fortune rediscovered it, and sent home good seeds and dried specimens, and it now proves to be a plant like a Rhus in aspect, but in reality a most curious genus of the natural order of Juglands. If, indeed, we could suppose a walnut to be pressed flat, reduced to the size and texture of a seed of the Alder tree, and then many such to be collected into a small cone, composed of hard, brittle, sharp-pointed scales, we should form artificially what nature has produced in this plant. This shrub or tree, for it is uncertain which it is, is perfectly distinct from all the other genera of Juglands in having its male flowers in catkins, like those of a willow, composed of narrow scales, hairy, and apparently white inside, with four small stamens at their base. The young nuts are small lenticular bodies with a wing on each side, a minute superior four-toothed calyx, and a pair of short-spreading stigmas. As the most remarkable genus found by Mr. Fortune during his Chinese expedition, it is proposed to give it the name of its indefatigable discoverer. Whether or not it will be hardy is uncertain; at present the seedlings have been kept in the green-house; but the climate of the Chusan Hills and Ningpo leads to the hope that it may prove an arboretum plant, at least in the South of England. The Chinese use the fruit of this to dye the black colour of their clothes.—*Hills of Ningpo and China, Mr. Fortune.*

Gardenia florida, var. *Fortuniana*, (Mr. Fortune's Gardenia).—The common single and double varieties of this plant are known to every one. That which is now noticed differs merely in the extraordinary size of the flowers, which are nearly four inches in diameter, and in having fine broad leaves, sometimes as much as six inches long. The flowers are pure white, changing to light buff as they go off, and not unlike a very large double camellia. Their calyx has the long broad lobes of the original species, instead of the narrow lobes, at least twice as short as the tube of the corolla, of *G. radicans*, by which that species is technically known. It is one of the very finest shrubs in cultivation, and ranks on a level with the double white camellia, which it equals in the beauty of the flowers and leaves, and

infinitely excels in its delicious odour.—*North of China, Mr. Fortune.*

Hoo-sung, or Oo-sung.—This is a lettuce-like plant, from Shanghae, seeds of which were sent from thence in a letter by Mr. Fortune, and received at the Garden, January 9th, 1845. It is possibly the *Youngia dentata* of De Candolle, or *Prenanthes dentata* of Thunberg. Stems cylindrical, two to three feet high, erect, light-green, with a green succulent pith, which is the part used. Leaves denticulate, or slightly serrated; the lowest oblong and tapering to the base, the uppermost stem-clasping, somewhat lanceolate, and taper pointed without being acute. The flowers are small, yellow, in panicles slightly drooping. The plant is tolerably hardy, and may be cultivated in the manner of lettuces. Mr. Fortune recommends it to be planted "in rows thinly, say one foot and a half between each plant. It is fit for use when the stem has grown to its full size, which is early in the spring at Shanghae." He also states that it is a vegetable much esteemed by the Chinese, and refers to the following "*Mode of Dressing the Hoo-Sung.*—Pare off the outer skin, cut off the leaves, and take the stalk; either simply boil it with salt, and eat it with pepper; or stew it with a few spoonfuls of soup, or with a little soy, salt and pepper. The last is the preferable way of dressing this vegetable." It would probably form a good preserve, similar to that made of the stems of lettuces when running up and before they become hollow.

Jasminum nudiflorum, (naked-flowered Jasmine).—This is a shrub with angular deep-green trailing branches, which have little disposition to branch in the first year of their growth. The leaves are shining, deep green, and each consists of three sessile leaflets of an ovate form. They fall off early in the autumn, soon after which they are succeeded by large yellow scentless flowers, which grow singly from the buds formed in the axils of the leaves that have previously dropped. The limb of their corolla is about an inch in diameter, and divided into six broad, oblong, blunt, flat segments. The species, although new to gardeners, is not entirely unknown, for it has been distributed in a dried state from the Imperial Russian-Chinese Herbarium, under the erroneous name of *J. angulare*. It appears to be a green-house plant, and grows freely in almost any sort of soil, especially rough sandy peat. During summer an ample supply of water should be given to its roots, and it must be syringed over head once or twice a day. In consequence of its slender habit it is necessary either to train it on a trellis or to induce it to form an upright stem three or four feet high, so that

the young twigs may hang down as they may be naturally inclined. Being a free winter bloomer, and continuing in flower for a length of time, it will doubtless prove a good addition to our green-house plants.—*Ninkin, Mr. Fortune, July, 1844.*

Pinus cembroides, (Cembro-like Pine).—Received from Mr. Hartweg, who found it in the cold districts of the mountain Orizaba, near the village of Chichiquila, attaining a height of thirty feet, at an elevation of 10,000 feet above the sea. Leaves in threes, from an inch to an inch and a half in length (on the wild specimens), rather rigid, slightly twisted at the base, triquetrous, very dense, and of a light-green colour. Sheaths short, and soon falling off or curling up. Seed-leaves on the young plants from ten to twelve in number when they first come up. Branches vertical, mostly in fives, but sometimes more numerous in the whorl, rather slender, slightly incurved and spreading, with tolerably smooth bark and remarkably small buds, which are imbricated and non-resinous, or nearly so. Cones single and sessile, from two inches and a half to three inches in length and one inch and three quarters broad at the base, with six or seven rows of scales, and tapering but slightly to a blunt point; the scales are rounded at the margins, three quarters of an inch broad, slightly elevated and nearly all of a size, except those close to the base, which are very much smaller and rather hooked. Each scale contains within it two wingless seeds, which are top shaped, slightly angled at the smaller end, and about half an inch in length. This Pine much resembles *Pinus Llaveana* in foliage and general appearance, but it differs in having smaller leaves and cones three or four times the size. Mr. Loudon, in his last edition of the *Arboretum Britannicum*, p. 993, identifies this pine with *Pinus Llaveana* of Schiede; but *Pinus Llaveana* has no resemblance whatever with *Pinus Cembra*, either in habit, foliage, or cones. The cones of *Pinus Llaveana* have but three rows of scales, while those of *Pinus Cembra* have eight, and those of *Pinus cembroides* six or seven scales each; the two latter, however, much resemble each other in their cones (whence the name *cembroides*), and chiefly differ in *Pinus Cembra*, or the Siberian Stone Pine, having cones rather larger than those of *Pinus cembroides*, with five leaves instead of three. Judging from locality and appearance, this pine is likely to prove hardy in England, and is quite new to the collections of this country.

Pinus Orizabæ, (Orizaba Pine).—Received along with *Pinus cembroides* from Mr. Hartweg, who collected it on the mountain of Orizaba, where it forms a tree of moderate

size. Leaves in fives, from eight to nine inches in length (on the wild specimens), very slender, sharp pointed, triquetrous, thickly set on the branches, very rough at the edges, of a light-green colour, and much resembling those of *Pinus pseudo-strobus*. Sheaths persistent, about half an inch in length, rather smooth and entire. Seed-leaves on the young plants from seven to eight in number. Branches numerous, spreading, rather irregular, slightly incurved and slender. Bark rather rough. Buds large, light-brown, much imbricated and destitute of resinous matter. Cones in clusters of four or five, pendulous, from four to five inches long and two and half inches broad at the base, straight and tapering to a point, with a footstalk nearly an inch in length, and from twelve to sixteen rows of scales in each, which are much elevated, slightly hooked, and nearly all of a size, but rather smaller towards the extremities. They measure about half an inch across, and each scale contains two very small seeds, with wings nearly an inch in length. This pine is very distinct from any previously known; it resembles the *Pinus pseudo-strobus* in habit and foliage, but differs entirely in the cones, which much resemble, but are not half the size of, those of *Pinus macrophylla*. No evidence has yet been obtained as to the hardiness of this species.

Pinus Montezumæ, (Montezuma's Pine).—Found by Mr. Hartweg on the mountains of Mexico, near Ajusco, forming a tree forty feet high. Leaves in fives, from three to four inches in length (on the wild specimens), rather stout, very rigid, triquetrous, rough at the angles, thickly set upon the young branches, and supported by long sharp-pointed brown scales at the base of each sheath. They are of a dark-green colour, and much resemble those of *Pinus Pinea*. Sheaths persistent, nearly half an inch in length, and rather rough; seed-leaves on the young plants from six to eight in number. Branches few, very irregular, rather stout and twisted; bark very rough, particularly on the young wood, which is covered with numerous long, broad, sharp-pointed scales. Buds few, imbricated, non-resinous, and rather lengthened. Cones in clusters of three or four together, but frequently single, mostly incurved, nearly horizontal, from four to five inches in length, and one inch and three quarters in the broadest part, which is near the middle, then tapering to both ends, but especially towards the point, which is rather small. Scales small and nearly equal in size, from sixteen to eighteen in depth, slightly elevated, and armed with a small prickle when young. Seeds small and winged. This pine is very distinct, both in cones and leaves, from the plant formerly distributed by the Society under the name of

Pinus Montezumæ, and of which Mr. Loudon published an account in his last edition of the *Arboretum Britannicum*, under the name of *Pinus Montezumæ* Lindleyi, he regarding it as different from the plant previously published by Mr. Lambert under the name of *Pinus Montezumæ*. It answers very well to the description of *Pinus Montezumæ* by Mr. Lambert, as quoted by Loudon; but the latter differs in the cones, which are said to be nine inches long, whereas those received from Mr. Hartweg are only half that length.

Pittosporum glabratum, (smooth-leaved Pittosporum).—This is an evergreen greenhouse shrub, with deep-green rather blistered convex leaves, which shine, as if varnished, when young, and are somewhat glaucous underneath. The flowers appear in terminal sessile umbels, are smaller and more slender than in *P. Tobira*, of a pale-greenish white colour and very sweet-scented. The form of its leaves and the slenderness of the corolla clearly separate it from that species. As yet this species has been treated as a greenhouse plant, but from its appearance there is reason to believe that it may stand out of doors against a wall. It grows freely in rough sandy peat under pot culture, but will probably succeed in common garden soil. It strikes freely from cuttings in silver-sand under a bell-glass without much heat. Although it makes no show in a greenhouse, yet should it prove hardy, its neat foliage and sweet-scented flowers will render it a desirable plant for a conservative wall. Mr. Fortune sent it from Hong Kong, May 1, 1845, where it was found growing on the top of the hills, forming a dwarf shrub, and flowering during the early spring months.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

AUTHORITIES.—*Journal of Horticultural Society*, JI. H. S.—*Gardener's Gazette*, G. G.—*Gardener's Chronicle*, G. C.—*Gardener's Journal*, G. J.—Quotations from which are duly acknowledged by the respective initials attached to each.

HYBRIDIZED WHEAT.—The Hon. R. H. Clive, M.P., laid before the Council of the Royal Agricultural Society (July 8th), a communication in reference to a decisive result obtained by Mr. Maund, of Bromsgrove, Worcestershire, (the well-known editor of the *Botanic Garden*), by crossing Egyptian Cone with an English red wheat, and thus producing a beardless wheat. Mr. Maund, on being introduced to the President and Council, exhibited the various specimens of wheat connected with his experiments, and detailed the progress of his operations in effecting the cross in question between different kinds of wheat, for the purpose of producing the artificial fertilization required. These

specimens exhibited the varieties between the Oxford Red and the Donna Maria white wheat, as well as those between the Egyptian Cone and the Oxford Red. In the produce of the latter cross, some of the ears had awns, while others were without them. Mr. Maund stated that the new varieties thus obtained in his experiments appeared to possess great luxuriance and promise of fertility. He thought it not unlikely that eventually not only any given external character intermediate between those of the wheats selected for the occasion may be obtained, but that the chemical nature of the grain may be favourably influenced for any given purpose required. The President on the part of the Council having then expressed to Mr. Maund the thanks which the Council, on the motion of the Duke of Richmond, seconded by Sir Robert Price, had voted to him for his attention in submitting to them his interesting and valuable results, requested that he would prepare for the Journal Committee, in the course of the autumn, a detailed statement of his experiments and their results, including not only a reference to the scientific circumstances of the fact, as connected with the laws of vegetable physiology, or the changes produced in the chemical constitution of the plant, but also to the more homely but not less important result of the practical value of his products as obtained by the miller and the baker. Mr. Maund has various other experiments in progress similar to the above, he having been engaged in investigating this subject about three years, and is, we believe, the first botanist who has turned his attention to the improvement of wheat by hybridization. It is, at the present moment, one of the most important subjects that can engage the attention of scientific men, and we hope that Mr. Maund, as the first to apply his favourite science so beneficially for the agriculturist, will be enabled to proceed and carry out what he seems so well to have begun.—*Worcester Journal*.

DWARF DAHLIAS FOR BEDDING.—The Dahlia is well adapted for growing dwarf, in the manner of Verbenas, and in this way makes beds of the most gorgeous appearance. The management required is by no means difficult, though it requires considerable attention to produce a fine effect. Those sorts only which are naturally of a dwarf habit should be chosen, and as there are abundance of this class now in cultivation, the selection is not difficult. In planting them, they should be placed as nearly flat as possible; as fast as the shoots grow they should be fastened down, not in the usual way with pegs only, but with small pieces of bass tied to a long wooden peg; the bass should be tied loosely round the shoot, allowing free room for future growth, and the

peg may be gradually driven deeper into the soil as the downward growth renders it safe—without this care the shoots are apt to be broken. This applies principally to the leading shoots; the laterals being left to grow to flower upward they will generally want thinning, as this mode of growing them increases their natural luxuriance greatly. The following sorts are well adapted to this kind of culture:—Marchioness of Ormonde (Browne's), clear white, tipped with violet-purple; Dazzle (Keyne's), rich dark scarlet; Duchess of St. Albans (Whale's), delicate primrose, tipped with mulberry; Bermondsey Bee (Proctor's), deep purple; Orange Superb (Dod's), dark orange; Lady Grey (Harrison's), light lilac. There are many others equally good, but these I have tried with complete success.—*J*.

ECONOMICAL HEATING.—A few years ago, a friend of mine wished to heat a pit intended for growing Melons in; the pit was thirty feet long, by seven feet wide. Not wishing to be at the expense of cast-iron pipes, he set about devising what would be the best plan to adopt for his purpose. After considering awhile what would be most useful, and at the same time least expensive, he determined upon trying hot-water. For this purpose he got an old cast-iron boiler, about the shape and size of the copper boilers used by housewives—that is, about eighteen inches wide at top, ten or twelve deep, and ten inches inside diameter at bottom; he built this into the wall at the end of the pit; fixed a large slate with cement, as a lid, and attached common round drain tiles, jointed with cement, for the pipes: a hole was made in the centre of the slate, to receive the end of one of the tiles, which was well cemented in, and served as a flow pipe; and a small hole near the bottom had about two feet of iron pipe fixed in, for a return pipe. The pipes went along the front of the pit and returned. At the end opposite the boiler, one of the common large tile clay pans, about as large as the boiler, was fixed a little above the level of the upper pipe, to hold a supply of water. This completed the apparatus, which was fixed entirely by his own hands; and a more useful, and easily heated apparatus I have not yet seen. Some of the Melons were ripe in the end of May, and for nearly five months the same plants kept up a succession of ripe fruit, of good flavour and fair size. Of course no fire was used during the greater part of this time, after the first of the fruit was ripe: more depended on the system of managing the vines (stems) after this period, than on any thing else; but at the same time, this shows how very simple means may be made to give very satisfactory results when properly guided. Nothing gives greater

credit to any person, than to use well the means at hand, in seeking a definite result.—*G. Dawson.*

WATERING MELONS.—There are few gardeners who like to see the leaves of their Melons spotted, and the young fruit damped off, which is partly by the awkward system practised in watering them. The plan that I consider the best is as follows:—Previous to earthing up my Melons, I strew the surface of the bed over with broken bones and charcoal, rather more of the latter than of the former. I then lay two slates under each light, at the distance of eighteen inches from the plants, and put a six-inch flower-pot on each of the slates, laying some charcoal on the slates to raise the pots about two inches, so as to allow the water given to escape freely about the roots of the plants. The Melons under this treatment show the good effects of the system.—*G. J.*

SHADING FLOWER BEDS.—It is not a bad plan to throw some branches over Verbena beds. I have used them since the middle of May, and have found them most useful. I cut them in lengths of about two feet six inches, and stuck them in the ground among the plants of Gaillardias, Senecios, Verbenas, Heliotropes, Petunias, &c. &c. It not only shades them from the sun, but prevents their being blown about by the wind until they are firmly rooted, and saves much watering. Plants that were turned out during the last week in May, or the first week in June, and thus treated, have nearly covered the beds, whereas others that were not shaded will take double the time, and require twice the amount of watering.—*M. Busby. G. J.*

THE PYRACANTHA.—The flowers of the evergreen Thorn, better known as the Pyracantha, (*Crataegus Pyracantha*), have a sweet smell, resembling new hay; and with its shining evergreen leaves, and bunches of bright scarlet berries, together with its docility of training, although properly a shrub, it is well adapted for any vacant space of wall (looks well against the wall of a house), and unquestionably ranks among the highest ornaments of the winter garden; indeed it is beautiful the whole year round, as the berries of the preceding season have scarcely disappeared before it is covered with beautiful bunches of white flowers.—*Flora Odorata.*

CAMELIAS, TO BLOOM IN WINTER.—To have Camellias in flower six or eight months in the year, it only requires healthy plants to commence with, every means being taken to maintain them so, and the early inflorescent habit induced to them, by most careful, in other words, very gradual and gentle forcing. The principal point is, after they have flowered, to develop and mature the annual growth, which,

it will be imagined, there is some difficulty in doing in December and January. There is, however, no obstacles which perseverance may not overcome, and which are not worth overcoming to produce a display of Camellia flowers from August to April. The bloom continues perfect in the winter a much longer period than it does as the season becomes more advanced.—*Magazine of Botany.*

HYBRID VERONICA SPECIOSA.—We have lately seen a very distinct and desirable hybrid of this fine shrubby green-house Veronica. Those who know this plant will readily concede to its stiff erect habit, ample rounded dark green foliage, and dense spikes of purple flowers, a distinctness of character which at once separates it, in appearance, from every thing else. The chief fault one may find of the original plant, is that the dark green of the leaves, and the dark purple of the flowers, together produce an effect somewhat heavy, and to look well, the plant requires to be seen under a peculiar distribution of bright light. In the hybrid referred to, while the distinctness of character is maintained, the objection referred to is in great measure obviated, for the flowers, instead of being purple, are of a rich deep rose-red, thus forming not only a handsome plant in itself, but at the same time, in the tint of colouring, a perfectly distinct variety from its parent. This opens a new field for hybridizing. We have several distinct and pretty shrubby species of Veronica, of which, perhaps, *speciosa* with purple, and *salicifolia* with whitish flowers, are the best; and besides these, there are some handsome ones which yet remain to be introduced. Even *speciosa* and *salicifolia* present great variety; the one is robust, erect, with thick rounded leaves, and erect dense spikes of flower; the other is more slender and bushy in its mode of growth, more prolific of flowers, and these flowers are produced in long slender drooping spikes; the leaves, too, are lance-shaped, and the whole plant has a light and graceful appearance. Something surely may be effected by hybridizing these. The habit of *salicifolia* is, perhaps, all that can be desired, and if to this can be added a more distinct and decided colour in its blossom than it now possesses, a plant would be produced, than which it seems difficult to conceive anything of the kind more beautiful. As the field is, in some degree, a fresh one—indeed, hardly at all broken up—we think we cannot do better than recommend it to the attention of those who feel an interest in such pursuits; and we can hardly believe that their efforts, if properly directed, would go unrewarded. Imagine a simple transfer of colour between the two kinds which have been particularly named, and the result would be the production of two

beautiful plants, perfectly distinct from what we now possess. Skilful hybridizing can certainly—if at least we are to judge of the future by the past—effect very much more than this.—*M.*

SPARMANNIA AFRICANA.—This noble greenhouse shrub has a remarkable flower, the form of the bloom is unlike anything else, and is in every way as curious as it is beautiful. The plant attains the height of upward of six feet, which renders it too large for one half of our greenhouse establishments. It is a native, we believe, of the Cape; at all events it was introduced from that place. It makes a fine conservatory plant, and is desirable not less for its foliage than for its bloom, which latter comes in bunches on the young branches, with long stems, and standing well out from the leaves, and being white, with red stamens, which form as it were a red eye to each flower. When Curtis figured the plant in 1800 or 1801, it had only bloomed at Kew, and at Whitley and Osborn's. It is about as tender as a geranium, grows freely from cuttings, and requires simply good draining, plenty of air, no frost, and freely watering when growing.

BALSAMS.—There is little doubt but that Balsam seed is the better for keeping. It has been found, in general, that new seed brings single flowers, and old seed double ones; but it is not quite clear that if half of the seed saved from any given flower were sown the next spring, and the other half saved three or four years before it was sown, that the difference would be manifest. We should like to see this experiment tried. Divide Balsam seed of one kind, saved from one plant only, into five portions; sow one portion each year; make accurate notes of how many came double, semi-double, or single, and of their colours, &c.; in short, take very accurate notes of their growth and condition. Do this the whole five years, and we should be able to appreciate the value of keeping seeds. One thing is pretty well known; that is, that the plants from new seeds grow more vigorously than those from old ones, and generally bloom less.

DOUBLE FLOWERS.—It is a curious fact that the botanists can never see any phenomenon without accounting for it in some strange theory; and yet, in most cases, the facts which they have not considered—perhaps not even noticed—pretty nearly always upset the theory founded on the facts they have observed. Flowers which sometimes come double, and sometimes single, give rise to a notion that stamens alter to petals, and even that one part of a flower alters to another part of a flower, and even that, under different circumstances, one part of a plant alters to another, as leaves to flowers, and so forth. But let us take the double wallflower—the

ordinary one; there is no alteration there. Year after year there are the double flowers, no changes whatever. Propagated by thousands, every plant yields the same kind of flower, which is a flat contradiction to the favourite theory. Stocks are much the same; but as they come double from seed, they are rarely if ever propagated from cuttings or slips, else the self-same flower comes double year after year; no alteration takes place in the form or in the various parts. The organs of generation are always absent, and, like all perennials, the same distinct thing is produced. If it be cut to atoms, and every atom makes a plant, they are all types of the original.

POTTING.—When we buy plants, it is necessary to turn the balls out of the pots, to examine the state they are in; and if they are very hard—if they are, as is too frequently the case, a solid mass of matted fibre, they are ticklish subjects to treat. The best thing is to put the ball in water, there to soak for hours; they will then easily shake out a little, and allow you to disengage the mass in some measure, and repot in a large-sized pot; but if the hard ball be merely removed from one pot to another, it will remain in its hard state. The water given to it will never penetrate; the plant dwindles and dies. There is nothing worse to get over than a pot-bound plant; and unless the matted root is disengaged, and the spent soil that is among it is soaked or washed out, there is little or no chance of its ever succeeding.

PROLONGING THE BLOOMING SEASON.—No plant can continue long in bloom if nature is permitted to do her work completely, for the going to seed exhausts the energies of any subject, and stops everything else. By constantly removing decaying flowers before a seed-pod can swell, the growth of the plant and the continued development of new buds and flowers upon the new growth, are matters of course. Try the experiment upon the China Rose. Two cottages having fine plants covering their fronts, being in the hands of two different persons, frequently exhibited the most striking contrast—one a mass of flowers, while the other was bare; and those who paid no attention to the cause, were, nevertheless, often surprised at the fact. Had they looked a little further into the matter, they would have observed that the one was loaded with the hips or seed-vessels, which were swelling in great numbers, while in the other not a solitary berry could be seen. In the one case every bloom was trimmed off as fast as it faded, in the other they took their chance. So it will be found in many other cases. It is only necessary to cut away the dead flowers, and the season of bloom will be prolonged.

*Begonia ramentacea.*

THE BEGONIA,

ITS VARIETIES AND CULTURE.

THE Begonia is rather an extensive genus, composed principally of stove-plants. It is named after Michael Begon, a Frenchman, and promoter of botany, and belongs to the natural order Begoniaceæ, and to the Linnæan Monœcia Polyandria. It consists chiefly of succulent-stemmed plants, which are remarkable for the obliquity of the leaves at their base; and, in the greater number of species, the flowers are very handsome. As a family, the culture of the Begonia has been a good deal neglected; and yet, for those who have any taste for an assemblage of allied plants, the Begonia offers inducements which are by

no means common. It is, doubtless, the fact of their being stove-plants, that has, at least partly, operated to produce the neglect into which they have fallen; yet they are by no means chargeable with the expense which is usually understood to attach to the culture of stove-plants. A small structure, with a temperature very slightly elevated above that of a green-house, would be sufficient to grow most, if not all, the species to pretty good perfection, as their growth would be chiefly effected in the summer season, when advantage could be taken of the heat of the sun; and in the winter, when the chief portion of expense

would be incurred, they would be benefited, rather than injured, by a low degree of temperature, as compared with what is usually considered necessary for stove-plants.

The affinities of the order are, by the analogy of properties, chiefly with Polygonaceæ. Some of the species known to botanists, such as *B. grandiflora*, and *B. tomentosa*, possess bitter, astringent roots, like those of the bistort, (*Polygonum Bistorta*.) Others, as *B. odorata*, have fragrant blossoms, in which they agree with *Polygonum odoratum*. The leaves of *B. nitida*, or *obliqua*, are used as sorrel, and are known in Jamaica as the Sorrel of the Woods; whilst in Brazil, the leaves of *B. ulmifolia*, *B. bidentata*, *B. spatulata*, *B. cucullata*, and *B. hirtella*, are used as cooling salads. Several species yield in Brazil a cooling drink, similar to that prepared in the East from *Rheum Ribes*; and oxalate of potass is obtained from several species, as well as from many kinds of *Rumex*. The root of *B. obliqua* is called Wild Rhubarb. In all these instances, it will be observed that the analogy of properties between the two orders is very considerable.

It has already been remarked, that the Begonias are, for the most part, stove-plants; but it is probable that when they come more generally and extensively into cultivation, several of the species will be found to grow with a very little increase of artificial heat above that afforded by a good green-house. The common species *B. discolor*, or *Evansiana*, may be cultivated to considerable perfection in sitting-rooms, for which its tuberous roots and annual stems peculiarly adapt it. *B. octopetala*, and *diversifolia*, and some others, possess a similar habit. This feature, taken in connexion with the geographical range in which any species may be found, will afford a pretty good index to those which may be expected to succeed with a less amount than usual of artificial heat.

With the exception of *B. discolor*, and the Cape and Mexican species, the whole must, however, be regarded as stove-plants, which, though admitting of cultivation, in many cases, in a low stove temperature, can only be regarded as attaining their greatest degree of development and perfection when afforded the ordinary treatment of stove-plants.

The Begonias may be divided into sub-shrubby, herbaceous, and tuberous-rooted stove species, and green-house species, each of which classes will be noticed separately.

The sub-shrubby species, or those with permanent fleshy stems, may be propagated by cuttings of the stems, or by seeds, which latter, in some cases, are produced freely. Being of a fleshy nature, the cuttings will root readily, in almost any situation where there is

heat enough for them. A moist heat of 65° will cause them to root speedily; or if this is not at hand, they will root with equal surety, though less quickly, if set in a shady part of a hot-house, or even in the window of a sitting-room; in the latter cases, the cuttings must be covered with a bell-glass, and attentively watered; but when placed in moist heat—as, for instance, in a hotbed-frame—they must not be covered in this way, as it would probably cause them to damp off. Any sandy soil will be suitable for rooting the cuttings in, the usual and necessary attention being paid with regard to drainage.

When the cuttings are rooted, the repotting of them must be duly attended to, in order to produce good specimens. The Begonias are plants which will exist, grow, and even flower, with very little attention, and when allowed to remain in small pots; but it is not in this way that the beauties they are capable of developing will be fully brought out. They require liberal treatment, as far as regards the



Begonia parvifolia.

elements of their growth; that is to say, they ought to be allowed plenty of pot-room, and copious supplies of water; and they are, when under careful treatment, all the better for getting a good portion of pot-room at one period—not a constant, every-now-and-then removal to a pot scarcely larger than the former, but a remove that will afford the roots some space to play, and extract food sufficient to produce a perfect plant. So large a portion of soil, however, and copious supplies of water, involve other considerations; the pots *must* be perfectly drained, and the soil should have intermixed with it a considerable portion of lumps of porous material, such as charcoal, free-stone, or broken bricks;

the plants too must be set where they will command the influence of abundance of light—every ray that can be afforded them—during the earlier stages of their progress; otherwise, the abundance of food taken up by the roots will not be properly elaborated, and its purpose will be defeated. Such potting as this must not be done, except in the spring and early summer, for the summer-flowering species, and early in the autumn for those that produce their bloom in winter and spring: it is the means to be resorted to, to produce the growth that is to afford abundance of flower; and, consequently, as the summer-blooming ones will not have commenced growth, and the winter-bloomers will be just arriving near maturity, neither class will properly require such potting in the depth of winter. In the case of plants that may be duplicates, and whose season of growth may have been altered for the purpose of securing a succession of bloom, repotting must of course be done at a period suitable for inducing bloom at the time required. If, with this in view, it becomes necessary to pot in the winter, of course a smaller pot will suffice than might be employed at a season more favourable to growth.

In regard to soil, the Begonias delight in that in which vegetable soil abounds, although, when vigour and maturity of growth are desired, something more substantial must be added. Nothing can suit the majority of them better than a mixture of the turfy part of sandy loam and well-reduced leaf-mould, in about equal proportions, or with a slight preponderance of loam, sufficient drift, or river-sand being added to cause the whole to be perfectly permeable to moisture. With a mixture such as this, and a good portion of drainage, in the shape of broken potsherds, or small lumps of charcoal, in the bottom of the pots, and some larger pieces used intermixed among the soil, all that need be attempted will have been done, so far as the soil is concerned.

The herbaceous species, including also under this head those with short stems an inch or two long, having leaves at their extremity, may be multiplied by division of the plant, and by seeds. Sometimes these short branches will issue from the lower part of the parent plant, and spring up through the soil, and become furnished with roots; in which case, the divided portions will be plants at once, and in a very little time will have become well-established, if ordinary care is afforded them after their removal. Sometimes, however, such portions may be detached without having roots already formed; and in this case they must be treated as cuttings. When they have a portion of roots when first detached, they should be carefully potted in small pots—as small as may suit their size, and should

then be removed to a warm and moderately close situation, until they are perceived to have commenced growing, when, of course, they may be regarded as being established. The same remarks, as regards soil and potting, apply to them, as to the sub-shrubby ones, excepting that, in some cases, the herbaceous ones, from the size of their leaves, and the general vigour of their growth, will require pots a trifle larger than the others.

The tuberous rooted species require precisely the treatment of tuberous and bulbous-rooted plants. Their leaves and stems die away in the autumn, after the flowering season is past, and the roots go into a state of inactivity and rest, until the return of the proper season when they are again to be brought into life and action. After the flowering season has passed and the plants have attained their full maturity, water must be gradually withheld, until the leaves and stems have gradually and entirely decayed, and separated from the tuberous roots. The roots are then to be placed away for the winter, in any dry warm place; a convenient way is to turn the pots on their sides on some dry shelf in the hot-house, or beneath some of the benches where the water does not drain through: it is desirable that the tubers should be preserved in the pots without being at all disturbed. By the end of February or the beginning of March, they may be taken out, and removed from amongst the old soil, and carefully repotted into pots corresponding to their size: the soil should be rather dry, and but moderately watered until they have manifested signs of growth. The same kind of soil may be used for these as for the others. When necessary the plants must be repotted, giving them a good shift when they have got into a fair growing state. Through the whole of this period they are to be placed in any convenient part of the stove, where they will be near the light, as for instance, on a shelf near the glass, or close to the front sashes. In the general features of their treatment, the plants will in other respects require the same attention as the others.

They do not require the excessive heat of a stove, and therefore, if any portion of the house is somewhat cooler than another, the cooler part is that which will be most suitable for the Begonias. It will be an advantage to place them all together in a group, not only for the sake of securing the characteristic appearance which this arrangement favours, but also that they may all be alike situated with regard to their treatment. They do not well associate with a miscellaneous collection of plants in their appearance, and the variety of habit, foliage, and colour of the flowers among them is sufficient to prevent anything like monotony

when kept in a group by themselves: and as regards treatment, especially with respect to moisture, this arrangement is much to be preferred; for in the growing season, when they require a liberal supply, it can be afforded, and they can be readily sprinkled with the syringe two or three times a day, which is very beneficial; and in the winter season, or when they are at rest, the syringing may be discontinued, and the soil more easily prevented from getting more moisture than would be desirable. These remarks apply chiefly to the plants during the periods of active growth and rest, for when in flower, it is of course quite proper to remove them to any particular position



Begonia coccinea.

where the beautiful effect of their blossoms may be required, and if several may happen to be at one time in bloom, it may be preferred to distribute them throughout the structure, rather than to locate them in one particular spot.

Having said thus much with respect to the situation most proper for them, it will hardly be necessary to say, that a mean artificial heat of sixty degrees is sufficient for them; of course, if they are kept in a stove, they will during spring and summer be submitted to a much higher degree of heat than this, derived directly from the rays of the sun.

Another advantage to be derived from the practice of grouping them together in one part of the house, consists in the facility afforded for shading the plants, or otherwise. During

the winter portion of the year, the whole of the species, except the tuberous-rooted ones, which will be stored by till the spring, are benefited by having as much light and sun as they can have at that season of the year, which, of course, is not much, and of which they would partially be deprived if associated among other plants, such as the majority of stove-plants usually are. In the summer, on the other hand, they are benefited by shade afforded in a moderate degree; and as shading is not required by the majority of a mixed collection, the arrangement of these in a separate group affords the readiest means of giving them the particular degree of shading which they require.

The treatment of the more hardy kinds which may be grown in a warm green-house, is similar in all the leading points to that already noticed for the others. Of course, being in a lower temperature, they will not either bear or require so much moisture as they would do under other circumstances. Especially during the winter season, when the plants will be in an inactive state, must this supply be limited, or the plants will be liable to rot off.

The green-house will be found exceedingly appropriate for the whole of these plants during the summer season, and the space thus gained for the circulation of air, and the more full admission of light, from their being less crowded by other plants, will be productive of great benefit in causing a more full and perfect maturation of the parts which have been formed during the spring and early months of summer. And those, too, which bloom at that period of the year, will also receive a very great amount of benefit, both in the colouring and preservation of their flowers; the colours will be produced much deeper and more brilliant, and the blossoms will be retained for a much greater length of time. When in this situation, the daily use of the syringe to supply the plants with moisture should be resorted to, for they are plants which especially delight in atmospheric humidity. Early in the afternoon, and also in the morning, the floors, pathway, stages, and even the plants themselves should be well damped, for the purpose of raising a genial humidity in the house; and this should especially be done in clear bright days, for the purpose of counteracting the parching effects of the sun, which without this precaution would speedily dissipate a great portion of the moisture both of the atmosphere and of the plants.

Some of the species produce seed, and from these young plants may be raised with facility by the following process:—the seeds should be sown as soon as they become ripe; they may be scattered thinly over the surface of a pot of well-drained peat earth, the top of

which should have been left in rather a rough and uneven state; over this the seeds may be loosely scattered, but not covered with soil; the pots should, however, be covered with a closely-fitting bell-glass to prevent the evaporation of moisture, and may then be set upon a shelf near the glass in the hothouse. Previously to sowing the seeds the soil should have been well damped. When the seedlings appear, a little air must be given by occasionally tilting up the bell-glass; and as soon as they are large enough to handle, they may be transplanted several together in the same pot of soil, and afterwards, when a little more advanced, potted singly into small pots, and treated as the established plants.

Besides this method of propagation, as well as that of cuttings and division of the plant, there is also another plan which may be adopted with some of the species. Several of the kinds produce small bulbs in the axils of the principal stem leaves, and when these become matured, which is easily ascertained by their separating readily from the stem, they may be treated just in the manner of seeds, and will produce a supply of young plants. These little bulbs furnish a means whereby the plants may be distributed with facility and success.

Nothing has yet been done in the way of hybridising the Begonia, and yet there does not appear to be any reason why the same effects should not be produced among these plants, which have been observed and experienced with others; or, in other words, there seems no reason why the good qualities of several of the species should not be amalgamated into one plant. If this is to be effected, it is by the practice of a judicious course of hybridising. There is not much to be done in the mixing of colours; white and red, and intermediate tints, being all that are at present known. The deep tint of *B. coccinea* might, indeed, be imparted to some of the other forms of growth: or, even white flowers might be produced in company with the foliage of those kinds which exhibit a considerable deal of red intermixed with dark green; on such a basis as this, pure white flowers would appear very charming. The increase of the size of the flowers of some, and the reduction of the size of the foliage in others, are points which might be aimed at, and would doubtless be accomplished; the former, especially, would be desirable. But the chief advantage to be gained from hybridising, in the case of the Begonia, appears to be that of increasing the size of the panicle, and, consequently, the aggregate number of blossoms; in some cases the panicle is large and exceedingly gracefully disposed; while in many others, the bunches of flowers are small and formal, and would admit of increased size and a more elegant dis-

position, with advantage to the general effect of the plants. The constant flowering habit of one or two of the species, also, is a characteristic which might be communicated to others with advantage. There is hardly scope for effecting much in the way of inducing a greater degree of hardiness among these plants; but, perhaps even something might be done in this way, and whatever might be secured, however trifling in amount, would be so far an improvement. We leave out all speculations as to improving the form of the individual blossoms, for the subject we are treating of is not one likely to suit the tastes of the florist; and his (so considered) improvements would not be appreciated by the admirers of Nature's forms and proportions.



Begonia Martiana.

Where the cultivation of any individual family is attempted, in a Wardian case, we know of none which could be chosen which would be so likely to succeed to the uttermost, and to satisfy, by the growth and blossoms produced. Space is the only restriction which need be put upon the kinds employed for this purpose, for the Wardian case is but circumscribed in extent, consequently, in choosing plants for cultivation in it, those should be selected which would have space to grow and produce blossoms, and at the same time leave room enough in the interior to admit of their being seen and examined without difficulty. We may refer to some remarks formerly offered for instructions in the management of plants growing in these cases, the general principles of which are the same in all instances requiring only a slight adaptation to suit the characters of the particular class of plants cultivated. The Begonias, being rather fleshy and succulent in their nature, would require rather less

of moisture than plants of a more rigid composition: a loamy soil with abundance of drainage would suit them very well, especially if intermixed with a portion of small lumps of such substances as charcoal, broken bricks, broken free-stone, &c. &c. The smaller growing species, as above referred to, are those which can be grown to the best advantage. For our own part, we should select such as the following, and employ as many of them as we could obtain, or the space would allow:—*B. semperflorens*, *reniformis*, *tuberosa*, *ulmifolia*, *Dregei*, *hydrocotylifolia*, *coccinea*, *ramentacea*, *parvifolia*, *geraniifolia*, *argyrostigma*, and several others might be named.

DESCRIPTIVE LIST OF BEGONIAS.

Begonia acida, (acid Elephant's-ear.)—A stout fleshy-stemmed stove plant, growing three feet high, with large thick fleshy peltate leaves, which as well as the stems are covered with a hoary woolly substance: the flowers are of a clear white colour, borne in large clusters. Native of Brazil. Also called *B. peltifolia*, *B. peltata*, and *B. pauciflora*.

Begonia acerifolia, (maple-leaved Elephant's-ear.)—A fleshy-stemmed stove species, with pale-coloured flowers, introduced from Brazil.

Begonia acuminata, (pointed-leaved Elephant's-ear.)—A slender-stemmed stove plant, growing from three to four feet, with unequal acuminate cordate hairy leaves, and pink flowers in small clusters from the axils. It blooms all the year. Native of Jamaica.

Begonia acutifolia, (acute-leaved Elephant's-ear.)—A fleshy-stemmed stove plant; the leaves are obliquely cordate, and narrow at the point; it bears panicles of white flowers in August. Native of mountains in Jamaica.

Begonia albo-coccinea, (scarlet and white Elephant's-ear.)—A very handsome herbaceous stove species, with short, somewhat creeping stems; large oblique peltate, or shield-shaped, almost kidney-shaped leaves, and loose spreading panicles of flowers, which are bright red externally, and white within. It is from the East Indies, and blooms throughout the spring and summer months.

Begonia argyrostigma, (silver-spotted Elephant's-ear.)—An erect, branching, shrubby stove plant, handsome even when out of flower, for its leaves are distinctly spotted with white; they are semi-cordate and oblique, red beneath; the flowers are white, in small drooping panicles. It blooms during the spring and summer months. Native of Brazil. Also called *B. maculata*, and *B. punctata*.

Begonia aptera, (wingless Elephant's-ear.)—A branching-stemmed stove plant, with large oblique ovate leaves, and producing graceful clusters of white flowers during summer and autumn.

Begonia Barkeri, (Barker's Elephant's-ear.)—An herbaceous green-house species. It has very large roundish leaves, and white flowers, produced in a huge mass on a foot-stalk four feet high, chiefly in the autumn months. Native of Mexico.

Begonia bulbifera, (bulb-bearing Elephant's-ear.)—A small tuberous herbaceous stove species, with pink blossoms, produced in September, October and November. It is from Peru.

Begonia castaneaefolia, (chestnut-leaved Elephant's-ear.)—A slender-stemmed stove species with ovate leaves, and blush-coloured flowers, produced from February to April. Native of Brazil.

Begonia coccinea, (scarlet Begonia.)—A very handsome, somewhat fleshy-stemmed stove plant, of compact branching habit, with unequal oval acuminate dark green leaves, red beneath; the flowers are numerous, and remain a long time on the plant; they are of a brilliant scarlet or crimson, in small spreading axillary panicles. Flowers through the summer months. Native of the Organ mountains of Brazil. Also called *B. rubra*.

Begonia crassicaulis, (thick-stemmed Elephant's-ear.)—This has short fleshy stems with deciduous leaves and white flowers; profusely produced in spring after the stems are leafless. It is from Guatemala. The leaves are large and palmate.

Begonia dichotoma, (two-forked Elephant's-ear.)—An erect shrubby stove plant four to five feet high, with large unequal cordate leaves, and branching panicles of white flowers. It flowers in July and August. Native of the humid woods of Caraccas. Also known as *B. longipes*, and *B. macrophylla*.

Begonia dipetala, (two petaled Elephant's-ear.)—A stove plant with naked fleshy stems, four feet high, and narrowish oblique heart-shaped leaves, which when young are faintly spotted with white. From the axils of the leaves are produced the pale pink flowers in small drooping clusters. Flowers from April to July. Native of Bombay, and other parts of the East Indies.

Begonia diptera, (two-winged Elephant's-ear.)—A stemless stove perennial, with unequally cordate leaves, and white flowers, produced in June. Native of the Cape of Good Hope.

Begonia digitata, (fingered Elephant's-ear.)—A rough erect-stemmed stove species, growing three feet high, with digitate leaves and white flowers, produced during the summer. Native of Brazil.

Begonia discolor, (two-coloured Elephant's ear.)—This is the common species, with large dark green hairy leaves, red beneath, which is found in many parlour windows. It is an annual-stemmed plant, bearing large pink

flowers on a drooping panicle, from May to September. It is a native of China, and is also known by the names of *B. Evansiana*, and *B. bulbifera*. It is sometimes commonly called the beef-steak plant. At Killanley Glebe, Ballina, some plants of this have been growing in the open air for several years.

Begonia disticha, (distichous Elephant's-ear.)—A fleshy-stemmed stove species, with acute leaves, and two-forked bunches of whitish flowers. It blooms from June to October. Native of South America.

Begonia Dregei, (Drege's Elephant's-ear.)—A small fleshy-stemmed erect stove plant; growing from two to three feet high, with small oblique angular leaves; the flowers are bluish-white, generally in pairs. It blooms in March. Native of the African continent. It is also known as *B. parvifolia*, *B. floribunda*, and *B. semperflorens*.

Begonia dubia, (doubtful Elephant's-ear.)—An herbaceous stove species, with unequally cordate leaves, and white flowers, produced in July. Native of Brazil.

Begonia fagifolia, (beech-leaved Elephant's-ear.)—A creeping-stemmed stove plant with ovate leaves, which together with the stems are covered with soft white hairs; it bears small white flowers in great profusion in the spring months. Native of Brazil. Called also *B. pendula*, and *B. repens*. It is beautifully grown on a trellis.

Begonia Fischeri, (Fischer's Elephant's-ear.)—A branching-stemmed stove species, growing two to three feet high: the leaves are rather small, unequally cordate, silky above and crimson beneath; the flowers are bluish-coloured. It blooms from February to April. Native of Brazil.

Begonia geraniifolia, (geranium-leaved Elephant's-ear.)—A tuberous-rooted herbaceous stove species, with small wavy leaves, like those of a geranium, and pretty deep pink flowers. It blooms in September, and was introduced from Lima.

Begonia heracleifolia, (heracleum-leaved Elephant's-ear.)—A strong-growing herbaceous species, with large palmated leaves, the stalks of which are two feet long, covered with white hairs, which rise from crimson spots; it has large bunches of bluish or pale pink flowers. Though rather coarse, it is a very pretty species. It blooms in the spring; and comes from Mexico.

Begonia hirsuta, (shaggy-leaved Elephant's-ear.)—A fleshy-stemmed, herbaceous stove plant; the leaves hairy, unequally semicordate; the flowers are white. It is a biennial, flowering in May and June. Native of the West Indies.

Begonia hirtella, (fringed Elephant's-ear.)—A slender-stemmed stove species, from three

to four feet high, with unequal, pointed leaves, and white flowers, produced in small clusters, from July to October. It is from the West Indies. Sometimes called *B. acuminata*.

Begonia homonyma, (kindred Elephant's-ear.)—A fleshy-stemmed stove plant, resembling *B. parvifolia*, growing from two to three feet high, with unequally angled leaves, and white flowers. It blooms during the summer and autumn. Native of Brazil. Also called *B. sinuata*.

Begonia Hookeri, (Hooker's Elephant's-ear.)—This is the *B. semperflorens* of some authors. It is a very pretty species, with short stems, and nearly round leaves, which are bright green, smooth and shining; it has pure white flowers in short panicles from the axils of the young leaves. It blooms through the greater part of the year, and was introduced from Mexico. It is also sometimes called *B. spathulata*, and *B. grandiflora*.

Begonia humilis, (dwarf Elephant's-ear.)—A fleshy erect-stemmed stove plant, of dwarf habit, with semi-cordate, oblique leaves, and white flowers, which open in September and October. It is a biennial. Native of the West Indies.

Begonia hydrocotylifolia, (hydrocotyle-leaved Elephant's-ear.)—A dwarf, stemless, or very short-stemmed stove plant, with numerous round, shining, dark green fleshy leaves, reddish beneath; and loose panicles of numerous light pink, very handsome flowers. It is one of the handsomest of the whole genus. It flowers in March and April, and remains a long time in bloom.

Begonia incana, (hoary Elephant's-ear.)—An herbaceous stove species, which has hoary leaves, and pink and white flowers. It is from Mexico, and blooms from April to July.

Begonia incarnata, (flesh-coloured Elephant's-ear.)—A branching stove plant, with stems four feet high; large oblique, dark green leaves, and pale pink flowers, in good-sized clusters. It blooms almost throughout the year. Native of Mexico.

Begonia insignis, (remarkable Elephant's-ear.)—A fleshy-stemmed, erect-growing, stove plant, with unequally cordate, acuminate leaves, and spreading, drooping panicles of large, handsome pink flowers. It blooms in December and January. Native of South America.

Begonia laurina, (bay-leaved Elephant's-ear.)—A strong, branching-stemmed stove species, growing four feet high, with ovate, beautifully serrated leaves, and graceful clusters of pink flowers; produced in summer.

Begonia longipes, (long-stalked Elephant's-ear.)—A sub-shrubby, fleshy-stemmed plant, growing five feet high, with large, unequally-lobed leaves, and clusters of white flowers on

very long stalks, produced from April to August. Native of Mexico. Also called *B. macrophylla*, and *B. odorata*.

Begonia manicata, (collared Elephant's-ear.)—An herbaceous, perennial stove plant, with broad, roundish, shining, light green, fringed leaves, the stalks and under part of which are furnished with a peculiar sort of scabiness, which is called *manicata* by botanists; the flowers are produced in a large spreading panicle, and are of surpassing grace and beauty, very numerous, and of a delicate pink colour. It blooms in February and March. Native of Brazil.

Begonia Martiana, (Martius' Elephant's-ear.)—A very handsome, delicate, herbaceous-stemmed stove plant, with tuberous roots, and obliquely ovate leaves; it has numerous axillary, usually two-flowered peduncles, bearing very large, deep pink flowers. It blossoms in the summer and autumn months. It is one of the most beautiful of the whole family, and was introduced from Brazil.

Begonia Meyerii, (Meyer's Elephant's-ear.)—A woody-stemmed, erect-growing, unbranched stove plant, growing four feet high, with roundish, woolly leaves, and dense clusters of white flowers, produced in February, March and April. Native of Brazil.

Begonia monoptera, (one-winged Elephant's-ear.)—An herbaceous, tuberous-rooted, stove species, with somewhat reniform leaves, and white flowers. Introduced from Brazil; and blooms from August to November.

Begonia multibubillosa, (bulbillose Elephant's-ear.)—A tuberous-rooted, herbaceous species, which produces numerous bulbils, or little bulbs. It has roundish leaves, and pink flowers. It blooms from May to September. It is native of Brazil.

Begonia muricata, (rough Elephant's-ear.)—A rough erect-stemmed species, growing three to four feet high, with digitate leaves and close panicles of numerous small white flowers. It blooms in autumn, and probably at other seasons. Sometimes called *B. digitata*. Native of Brazil.

Begonia nitida, (shining-leaved Elephant's-ear.)—A straggling, woody-stemmed stove plant, of moderate size, with smooth, oblique, cordate leaves, and large, drooping panicles of pink and white flowers. It flowers from May to September, and more or less through great part of the year. Native of Penang. Called also *B. obliqua*.

Begonia octopetala, (eight-petaled Elephant's-ear.)—A stemless, tuberous-rooted stove plant, with unequal cordate leaves, and greenish white flowers, produced in October. Native of Lima and Peru.

Begonia odorata, (sweet-scented Elephant's-ear.)—A slender-stemmed stove spe-

cies, growing four feet high, with large, unequal, smooth leaves, and large clusters of white flowers, produced during the spring months. Native of South America. Also called *B. suaveolens*.

Begonia palmata, (palmated Elephant's-ear.)—An herbaceous species from Nepal, with palmated leaves, and pink flowers. It blooms from May to September.

Begonia papillosa, (pimpled Elephant's-ear.)—A fleshy, erect-stemmed stove plant, with large, broad, cordate leaves; very rough, being covered on both sides with rigid hairs. The flowers are produced in loose panicles, and are of a rose-pink colour. It flowers from July to September. Native of Brazil.

Begonia parvifolia, (small-leaved Elephant's-ear.)—A very neat branching-stemmed compact growing stove plant, with small angulated oblique leaves, and little clusters of blush-white flowers, produced throughout the whole summer; it is a very neat looking plant. Native of the Cape of Good Hope. It is sometimes called *B. floribunda*, and *B. semperflorens*.

Begonia patula, (spreading Elephant's-ear.)—A fleshy-stemmed stove species; the leaves are unequally cordate, the flowers blush-coloured. It flowers from May to September, and comes from the West Indies.

Begonia picta, (painted-leaved Elephant's-ear.)—A tuberous-rooted herbaceous species of low growth, flowering when about six inches high; the leaves are dark green above, red beneath, and hairy, of a heart-shaped figure; the flowers are large, pale pink, elevated in small clusters above the foliage. It flowers from June to September. Native of Nepal. This species would probably grow freely in a warm green-house.

Begonia platanifolia, (plane-leaved Elephant's-ear.)—This is a strong growing fleshy-stemmed stove species, with large angulated leaves and pinkish flowers. It blooms from May to September. Native of Brazil.

Begonia pulchella, (pretty Elephant's-ear.)—A stove species from Brazil; the leaves are semi-cordate, and the flowers are white. Blooms in July and August.

Begonia petaloides, (petaloid Elephant's-ear.)—An herbaceous stove species, with angulated leaves and white flowers, blooming in April and May. Native of Brazil.

Begonia rupestris, (rock Elephant's-ear.)—A slender-stemmed stove species, growing from two to three feet high, with oblique ovate leaves, marked with white silvery dots, and pink flowers, produced in spring. Native of Brazil.

Begonia ramentacea, (scaly Elephant's-ear.)—A handsome stove plant, with very short thick stems, and large obliquely ovate leaves,

red beneath, above which the clusters of blossoms, whitish, delicately tinged with pink, are gracefully disposed in spreading panicles. It blooms several times in the season. It was introduced from Brazil.

Begonia reniformis, (kidney-shaped leaved Elephant's-ear.)—A fleshy-stemmed stove plant, with kidney-shaped unequal leaves, and panicles of white flowers. It blooms in July and August. Native of Brazil.

Begonia rubricaulis, (red-stemmed Elephant's-ear.)—An herbaceous stove perennial, with large oblique cordate, glossy leaves, and close panicles of large showy red and blush flowers; the flower stems and leaf stalks are of a bright red. The native country is not ascertained. It blooms from June to October.

Begonia sinuata, (sinuated-leaved Elephant's-ear.)—An erect branching-stemmed stove species, growing about three feet high, with large oblique leaves like those of *B. odorata*, which this plant altogether resembles. It bears white flowers during the spring months. Native of South America.

Begonia sanguinea, (blood-coloured Elephant's-ear.)—An upright plant, growing three feet high, with fleshy stems, unequally cordate leaves, dark red beneath, and bunches of small white flowers. It blooms from July to October. Native of Brazil.

Begonia scandens, (scandent Elephant's-ear.)—A scandent or climbing stove plant, with ovate, subrotund leaves, and small greenish white flowers. It blooms in July and August. Native of Jamaica and Guiana. Also called *B. glabra*.

Begonia Sellowii, (Sellow's Elephant's-ear.)—This stove species has white flowers produced in September.

Begonia spatulata, (spatula-leaved Elephant's-ear.)—A succulent-stemmed stove plant, growing two or three feet high, with oblique and somewhat oval leaves, pale beneath, and small bunches of pale pink or whitish flowers, which are very freely produced; the plants are scarcely ever out of bloom. Native of Brazil. It requires the stove in winter, but bears a good deal of exposure in summer, as doubtless many others would do were they tried. Also called *B. cucullata* and *B. grandiflora*; sometimes *B. semperflorens*.

Begonia stigmosa, (spotted-leaved Elephant's-ear.)—This is rather a pretty stove species, with a short stem, and oblique cordate leaves, curiously fringed on the margin, and beautifully marked with purple spots; the flowers are greenish-white, in loose panicles.

Begonia tuberosa, (tuberous Elephant's-ear.)—A tuberous-rooted dwarf stove plant, with cordate oblique leaves, and pinkish-white flowers. It blooms from July to September. Native of Amboyna.

Begonia ulmifolia, (elm-leaved Elephant's-ear.)—An erect branching-stemmed stove plant, with ovate, elm-like, unequal leaves, and small panicles of blush-white flowers. It blooms from May to October. Native of America.

Begonia undulata, (wavy-leaved Elephant's-ear.)—A sub-shrubby, taper-stemmed plant, with oblong, wavy leaves, and large drooping clusters of white flowers, blooming from August to December. Native of Brazil.

Begonia villosa, (villose Elephant's-ear.)—A fleshy-stemmed stove species, with semi-cordate leaves and white flowers, blooming from August to October. Introduced from Brazil.

Begonia vitifolia, (vine-leaved Elephant's-ear.)—An upright, fleshy-stemmed stove species, growing three to four feet high, with large peltate unequally-toothed woolly leaves, and large drooping clusters of white flowers. It is from Brazil.

Begonia zebrina, (zebra-striped Elephant's-ear.)—A strong, branching, streaked-stemmed stove plant, with large oblique leaves, beautifully marked with dark green shades on the under side, and bearing clusters of pink flowers, in March and April. Native of Brazil.

In the *Journal of the Horticultural Society*, Mr. James Donald has described upwards of forty species, and it may be useful to add a synoptical view of his arrangement of them, which is as follows:—

Stems none.

Begonia rubricaulis.

Stems creeping.

Leaves palmate, equal at the base.

Begonia heracleifolia.

Begonia crassicaulis.

Leaves ovate, equal at the base.

Begonia fagifolia (pendula, repens).

Leaves oblique, ovate, acute.

Begonia manicata.

Leaves oblique, obtuse, often round.

Begonia stigmosa.

Begonia Barkeri.

Begonia ramentacea.

Begonia hydrocotylifolia.

Leaves oblique, peltate.

Begonia albo-coccinea.

Stems erect, seldom branching.

Leaves digitate, equal at the base.

Begonia muricata (digitata).

Begonia digitata.

Leaves oblique, partially lobed.

Begonia dichotoma (longipes, macrophylla).

Begonia longipes (macrophylla, odorata).

Leaves oblique, ovate.

Begonia papillosa.

Begonia dipetala.

Begonia Meyerii.

Leaves oblique, ovate, peltate.

Begonia peltifolia (acida, pauciflora, peltata).

Begonia vitifolia.

Stems erect, branching, fleshy at the base.

Begonia homonyma (sinuata.)

Begonia parvifolia (floribunda, semperflorens-).

Begonia Dregei (parviflora, floribunda, semperflorens).

Stems erect, branching, not fleshy at the base.

Leaves oblique, ovate, acute.

Begonia Fischeri.

Begonia rupestris.

Begonia acuminata.

Begonia hirtella (acuminata).

Begonia Martiana (diversifolia).

Begonia incarnata.

Begonia zebrina (undulata).

Begonia Evansiana (discolor, bulbifera).

Begonia undulata.

Begonia argyrostigma (maculata, punctata).

Begonia odorata (suaveolens, sinuata).

Begonia sinuata (odorata).

Begonia nitida.

Begonia aptera.

Begonia laurina.

Begonia sanguinea.

Begonia coccinea (rubra).

Begonia ulmifolia.

Begonia castaneefolia.

Leaves ovate, obtuse, often unequal at the base.

Begonia semperflorens (Hookeri, spatulata, grandiflora).

Begonia encullata (spatulata, semperflorens, grandiflora).

The names inserted in parentheses are synonymes applied to the plants in different collections.

MR. FORTUNE'S MISSION TO CHINA IN SEARCH OF NEW PLANTS.

THE last published part of the Horticultural Society's Journal,* which, by the way, is the most interesting that has yet appeared, contains a sketch of this mission, written by Mr. Fortune, since his return to England; from this account we shall quote somewhat fully:—

"When the news of the peace with China first reached England in the autumn of 1842, the Council of the Horticultural Society of London, believing that an extensive field of Botanical and Horticultural treasures lay unexplored and unknown in the northern parts

of that empire, appointed me as their collector. I left England early in the spring of the following year, and arrived in China on the 6th of July. Several cases of living plants were sent out under my charge, as well as a large quantity of vegetable and flower seeds, the greater part of which arrived in excellent order. The fruit-trees and vegetable seeds were greatly prized by English residents in the northern parts of the country, where such things succeed much better than they do in the south. Captain Balfour, H. M. Consul at Shanghai, kindly offered me ground in the garden of the Consulate where I could plant the trees, and where they were to be considered as public property: that is, any one who might apply was to be supplied with grafts at the proper season of the year. By this means the kinds would soon be multiplied and secured in the country until the fruit could be seen and appreciated by the Chinese themselves. Such things are of great value in China, owing to the very bad varieties of both apples and pears which the Chinese at present possess.

"The voyage out was too much like others of the same kind to afford much worthy of notice, until we reached the beautiful islands in the Java sea. The vessel anchored abreast of the village of Anger, in Java, for the purpose of procuring a supply of water and other fresh provisions, and during the time required for this purpose I gladly availed myself of the opportunity of going on shore. Here I found the fine new variety of *Dendrobium secundum*, which I afterwards sent home, and which has been given away to several of the Fellows of the Society.

"Having a fair monsoon up the China Sea, we arrived at Macao in a fortnight after leaving Java. The first view we had of the shores of this celebrated country was far from promising. The islands which lie scattered over this part of the sea, as well as the shores of the mainland, have a most bleak and barren appearance. Granite rocks are seen everywhere protruding through the soil and rearing their heads above the scanty vegetation. The soil of the hills is a reddish clay, containing very little vegetable matter, and is mixed with portions of the granite in a decaying state, and generally has a cracked and burnt appearance. It is of course a little richer in the ravines and valleys, where the best portions are annually washed down by the rains; but even here it is far from being good soil, at least what would be considered as such in England.

"When I landed at Hong Kong, my letters of introduction, both from the Government and from private individuals, procured me many friends, who were most anxious to for-

* The Journal of the Horticultural Society. Vol. I. Part III. London. Published for the Society, by Longman & Co. 1846.

ward the views of the Society. Messrs. Dent and Co. in particular not only gave me a room in their house, but placed their gardens at Macao and Hong Kong entirely at my service, giving me leave to take from them any plant I might wish to send to England, and to use them for depositing any of my collections in, until an opportunity occurred of sending them home.

"As soon as I was fairly clear of the ship I began my researches upon our island of Hong Kong, then in its infancy as a British settlement. This island is a chain of mountains, 1800 or 2000 feet high, sloping in a rugged and unequal manner on each side, down to the sea. It is about ten miles in length, from east to west; in some places three, in others five in breadth, and contains very little level ground capable of cultivation. In its general features and sterility it is exactly the same as I have already noticed with regard to the other portions of this part of the Chinese empire.

There are few trees of any size to be met with on the island except those kinds, such as Mangos, Lee-chees, Longans, Wampees, Guavas, and other well known things, which are planted and reared in some of the most fertile spots for the sake of their fruit. *Pinus sinensis* is met with everywhere on the hill sides, but it never attains any size, partly owing to the sterility of the soil, and partly to the practice which the Chinese have of lopping off its under branches yearly for firewood. Several species of *Lagerstrœmia* are met with, both wild and in gardens, and are so ornamental when in bloom, that they always reminded me of our own beautiful hawthorn. The Screw pine (*Pandanus odoratissimus*), and two or three well-known species of Palm, are met with on the low land near the sea. As we ascend, the hill sides and ravines become rich in *Melastomas*, *Lycopodiums*, Ferns, *Phaius grandifolius*, and several other familiar Orchideous plants. It is a curious fact, however, that all the fine flowering plants which we admire so much in England are found high up on the hills. The Azaleas, *Enkianthus*, and Clematises, for example, generally choose situations from 1500 to 1800 feet above the level of the sea.

"After three weeks of hard labour and exposure under a July sun, both on the islands and mainland in this part of China, I was forced to come to the conclusion at last, that the south had been too much ransacked by former botanists to yield now much that was really new, and at the same time ornamental. Two or three good plants, however, to a certain extent, repaid me for my labour, and these reached England alive a few months after this time. Their names are *Chirita*

sinensis, *Arundina sinensis*, *Spathoglottis Fortuni*, and a curious dwarf *Lycopodium*, which is like a tree fern in miniature.

"The heat at this time was very great, the thermometer frequently standing at 92° F. in the shade, and 140° when exposed to the sun, but even this was nothing when compared with those sensations which every foreigner in Hong Kong feels from the dry and heated air, probably caused by the absence or scarcity of trees and shrubs.

"Having completed my researches for the season at Hong Kong, I left the island on the 30th of August, and proceeded to Canton and Macao. At Canton the principal objects of attraction in a botanical way are the gardens of the Hong merchants, and the celebrated collections at a place called Fa-tee. The latter are simply nursery gardens, where plants are grown and exposed for sale. Many beautiful species, almost all natives of the south of China, are met with in these gardens, which, however, possess little that is really new or unknown in England. I believe the only plants of any value which I was able to introduce to this country from the gardens of Canton and Macao were the Fingered Citron, the true Mandarin Orange, and the striking and beautiful *Camellia hexangularis*.

"I now determined to proceed immediately to the northern provinces as soon as I could find a vessel in which I could engage a passage. I sailed on the 23d of August, and after visiting the island Namoa, and some others of less note on the way up, I reached Amoy on the 3d of September. To my disappointment, this part of China was even more sterile and barren than that in the province of Canton. The island of Koolungsoo, then in the hands of the British, is divided from Amoy by a narrow arm of the sea. From the number of pretty houses and gardens which were found upon it when taken by our troops, there can be no doubt that it was here where the rich and gay amongst the Amoy merchants had their country and family residences. The gardens, however, pretty as they were, contained few plants of value, or different from what I had already met with at Hong Kong and Canton. Some roses which I sent to the Horticultural Society from that place are said to be very distinct and fine, but I have never had an opportunity of seeing them in bloom.

"Having travelled all over the country adjacent to Amoy and completed my researches, I sailed again towards the Formosa Channel, on my way to our most northern stations of Chusan, Ningpo, and Shanghai. The monsoon, however, had now changed from south-west to north-east, and we experienced very stormy weather, and strong northerly currents,

which, of course, were directly against us. The vessel was at last obliged to put into the Bay of Chinchew from stress of weather, and having sprung her bowsprit in the gale, it was impossible for her to proceed. In a day or two her cargo was got out and put into another vessel, in which I also embarked, and we again proceeded on our voyage. This attempt was even more disastrous than the last, for after being out for several days, and nearly through the Formosa Channel, we met one of those dreadful gales so well known to the navigators of these seas; our newest and strongest sails were split to pieces, the bulwarks washed away, and in spite of every exertion we were driven back far below the bay from which we started about a week before. Two plant cases which I had with me at the time were dashed to pieces, and their contents, of course, completely destroyed. The Horticulturists and Gardeners of this country, who are so critical when they find a few deaths in plant-cases after a voyage of fifteen thousand miles, know little of the dangers of the ocean.

"During our stay to refit in the bays of Chimoo and Chinchew, I availed myself of the opportunity of exploring the adjacent country. It was on these hills that I found the pretty *Abelia rupestris*, *Campanula grandiflora*, and *Statice Fortunei*, which are now in the garden of the Society at Chiswick. The natives in this part of the country are a lawless and independent race, who care nothing for the Government, and who set the laws of the empire at defiance. I and my servant were sometimes placed in most critical situations amongst them, where a great deal of tact and determination were necessary to get us safely out of their hands.

"Our little schooner being refitted, we again hove up our anchor, and stood out to sea. This time the winds favoured us, and in ten days we were safely moored in the beautiful Bay of Chusan. As we approached the islands of the Chusan Archipelago, I was much gratified with the great change in the aspect of the country. There was a freshness and luxuriance about the vegetation entirely different from what I had seen before. Fewer rocks were seen protruding through the ground, and many of the hills were cultivated nearly to their summits, which at once proved the superior nature of the soil. The first glance at the vegetation convinced me that it was very different from what I had seen in the south, and that the north of China must be the chief scene of my future labours in the country.

"I now delivered my letters of introduction to Major-General Sir James Schoedde, the officer in command, who very kindly procured me quarters in a Chinese house inside the city

of Tinghae, to which I removed from the ship, and immediately commenced operations. I was now fortunate enough in getting acquainted with Dr. Maxwell, of the Madras army, who was stationed there at the time. This gentleman, who was an ardent lover of botanical pursuits, had been most indefatigable in his researches, and was consequently able to give me a great deal of valuable information.

"I was now continually travelling amongst the hills, not only of Chusan and the adjacent islands, but frequently on the mainland, where I went without being molested in any way. The dispositions of the people seemed to have changed with the aspect of their country. Their features were more European; they seemed perfectly harmless, appearing to bear us no ill-will, and frequently were even kind, which is saying a great deal for the Chinese, unless they have some selfish motive for such conduct.

"After getting together a considerable number of plants and seeds, an opportunity offered of visiting Shanghai. That port had not been yet formally opened, and the chances of getting there were few and not to be neglected. I was therefore glad of the opportunity, and sailed for the Yang-tse-Kiang on the 13th of November. As we approached Shanghai, we seemed to have got into a new country. The mountainous scenery had entirely disappeared, and even from the top of our highest mast there was not a hill seen to bound the distant horizon—all in view was one flat level plain. This is what is called the valley of the Yang-tse-Kiang, and is the great northern Nankin cotton district. The land is a rich deep loam, and is without doubt the finest in China, if not in the world.

"In a country like this, which is everywhere flat and cultivated, it was not expected that I could find very many wild plants. Two, however, were met with, which have since attracted a considerable share of notice in England. I allude to *Cryptomeria japonica*, and *Anemone japonica*. The latter was found, when in full flower, amongst the graves of the Chinese, which are round the ramparts of the city. It blooms in November, when other flowers have gone by, and is a simple and beautiful ornament to the last resting-places of the dead. If the number of wild flowers in this district was few, they were well made up by those which I afterwards found in gardens and nurseries. From the number of flower-shops in the city, which at this season were filled with *Chrysanthemums*, I was quite certain that there must be somewhere in the vicinity nurseries for their cultivation, but the great difficulty was to find them out. The Chinese here, who knew little or nothing

of us except as their conquerors, were frightened and jealous, and would give no information on the subject. They always suspected that I had some other object in view than simply collecting the plants of their country. At that time I could not speak a word of the language; and my servant, who was brought up from the province of Canton, was equally at fault, so that every thing was up-hill work with us. However, by examining every hole and corner of the city and suburbs, and sometimes getting the boys, who were less jealous than the rest, to assist us, we discovered several nurseries which contained large collections of plants, many of which were quite new and very ornamental. I was also much assisted by H. M. Consul, Captain Balfour, who was always ready and willing to aid me in my pursuits. Amongst other things, a very valuable collection of Tree Pæonies was obtained at this time.

"It was now the depth of winter, and as vegetation was leafless, it was impossible to make anything like a complete collection until the following year, when the plants would be covered with leaves and flowers. I therefore packed up the things which I had already secured, and sailed for Ningpo on my way to the south.

"Here I had the same difficulties to encounter as I had at Shanghai, owing to the jealousy of the Chinese. Ultimately, however, I discovered several mandarins' gardens and nurseries, from which I made additions to my collections. All these things were of course out of flower, and some of them leafless at this season of the year; but it will be seen afterwards that many of them proved most remarkable plants. Here, as at most other places, I made many inquiries after the supposed Yellow Camellia, and offered ten dollars to any Chinaman who would bring me one. Any thing can be had in China for dollars! and it was not long before two plants were brought to me, one of which was said to be light-yellow, and the other as deep as the double yellow rose. Both had buds upon them, but neither were in flower. I felt quite certain that the Chinaman was deceiving me, and it seemed so foolish to pay such a sum for a plant which I would in all probability throw away afterwards, and yet I could not lose the chance, slight as it was, of possessing the yellow Camellia. Moreover, there was a written label stuck in each pot, both of which were old, and apparently the labels and writing had been there for some years. At last we compromised the matter; I agreeing to pay half of the money down, and the other half after the plants had flowered. On these conditions I got the Camellias, and took them with me to Hong Kong. It is almost need-

less to say that when they flowered nothing was yellow about them but the stamens, for they were both semi-double worthless kinds.

"I now hired a Chinese boat, and crossed over to Chusan, where I arranged my collections and sailed for the south, arriving at Hong Kong on the 19th of January, 1844. My chief object now was to get cases made, and my collections packed and shipped for England. About eighteen cases were sent home in three different ships about this time, and several small packets of seeds were sent by the overland mail.

"As it was autumn when I was travelling in the north of China, many of the plants on the hills were in seed, and it was impossible for me to say whether their flowers were ornamental or not. I made a selection however upon chance, considering that there would be, at least, some good things amongst them, and that by this means a season would be gained. I did not intend them to be given out to the country until they were proved at the garden, or until I could have an opportunity of seeing them in bloom on the Chinese hills, and of sending a description home. The seeds being in good condition were soon raised, and unfortunately many of them were given away, which did not prove at all ornamental. Others, however, were really valuable things, amongst which I may mention the *Buddlea Lindleyana*, the *Azalea ovata*, and the *Cryptomeria japonica*.

"The plant cases to which I have already alluded contained amongst other things the following, many of which have been already given away to the Fellows of the Society:—

<i>Chirita sinensis</i>	<i>Buddlea Lindleyana</i>
<i>Arundina sinensis</i>	<i>Anemone japonica</i>
<i>Spathoglottis Fortunei</i>	<i>Lycoris radiata?</i>
Fingered citron (true)	<i>Daphne Fortunei</i>
<i>Campanula grandiflora</i>	<i>Forsythia viridissima</i>
<i>Azalea obtusa</i>	<i>Jasminum nudiflorum</i>
" <i>ovata</i>	<i>Weigela rosea</i>
" <i>squamata</i>	<i>Indigofera decora</i>
<i>Abelia rupestris</i>	<i>Cryptomeria japonica</i>

and twelve or thirteen very fine new varieties of the Tree Pæony, having several shades of purple, lilac, deep red, and white flowers. Besides these, the cases contained a number of valuable plants which have not flowered, and about which little is at present known.

"While I was waiting in the south of China for the dispatch of the collections just noticed, I took the opportunity of visiting Canton and Macao at two different times, and saw the Camellias, Azaleas, Moutans, and other plants in bloom. The gardens of the Hong merchants and the nurseries at Fa-tee are particularly gay during the spring months with these flowers. The Moutans are yearly brought down from the north to Canton,

where they flower shortly afterwards, and are then discarded as useless, as the climate of the south of China is too hot for them; this trade therefore is not unlike that of Dutch hyacinths in Europe.

"The mountains near Canton, which I visited in company with the late Mr. Lay, as well as those of Hong Kong, were very gay at this season with the flowers of the beautiful *Enkianthus reticulatus*, *Azalea squamata*, and various other species. This part of China, however, had little to increase my collections, and on the 26th of March I started again for the northern provinces.

"The whole of this season was spent in the Chusan, Ningpo, and Shanghai districts, my principal object being to see all the plants of these places in flower, and to mark those which I wanted for seed. In order to do this effectually I was obliged to visit each district three or four times during the summer and autumn.

"The Flora of Chusan and all over the mainland in this part of China is very different from those portions of the south which I have already described. Almost all the species of a tropical character have entirely disappeared, and in their places we find others related to things found in the temperate parts of the world. I here met for the first time the beautiful *Glycine sinensis* wild on the hills, where it climbs in hedges and on trees, and allows its flowering branches to hang in graceful festoons by the sides of the narrow roads which lead across the mountains. The *Ficus nitida*, so common around all the temples and houses in the south, is here unknown, and many of those beautiful flowering genera which, as I before remarked, are only found on the top of the mountains in Hong Kong, here have chosen less exalted situations; I allude more particularly to the *Azaleas* which abound on the hill-sides of this island. Most persons have seen and admired the *Azaleas* which are yearly brought to the Chiswick fêtes, and which, as individual specimens, surpass, in most instances, those which grow and bloom on their native hills; but few can form any idea of the gorgeous and striking beauty of these *Azalea* clad mountains, where on every side, as far as our vision extends, the eye rests on masses of flowers of dazzling brightness and surpassing beauty. Nor is it *Azaleas* alone which meet the eye and claim our attention: clematises, wild-roses, honeysuckles, the *Glycine sinensis*, noticed above, and a hundred other things, mingle their flowers with them, and make us confess that, after all, China is indeed the 'central flowery land.' There are several species of *Myrtaceous* and other *Ericaceous* plants, which are also common on the hills, but no species of heath

has been ever found; and I believe the genus does not exist in this part of China.

"The tallow-tree (*Stillingia sebifera*) is abundant in the valleys of Chusan, and large quantities of tallow and oil are yearly extracted from its seeds. The *Laurus camphora*, or camphor-tree, is also common, and attains a very large size, but, so far as I know, no camphor is extracted or exported from the island. *Thea viridis* — the green-tea shrub — is cultivated in some parts rather extensively; but if we except a small quantity of tea which is annually sent over to Ningpo and the adjoining towns on the mainland, the whole of the produce is used by the natives themselves. Every small farmer and cottager has a few plants on his own premises, which he rears with considerable care, but seems to have no wish to enter on its cultivation on a larger scale for exportation. Indeed it is questionable if it would pay, as the soil is scarcely rich enough; and although the shrub grows pretty well, it is far from being so luxuriant as it is in the larger tea-districts of the mainland, which I afterwards visited.

"The forests of different varieties of Bamboo are very striking, and give a kind of tropical character to the scenery of this part of the country. I do not know anything more beautiful than the yellow bamboo, with its clean straight stems and graceful tops and branches waving in the breeze; it always reminded me of our young larch forests in England. The *Pinus sinensis* noticed in the south is also common here: it seems to be an exception to the general rule, being found over all the country, and in every degree of latitude. The *Cunninghamia sinensis* is also found in abundance; and besides these there are several species of Cypress and Juniper found growing around the tombs of the rich, which are scattered over the valleys and hill sides.

"The fruits of Chusan are of very little importance; nearly all the peaches, grapes, pears, plums, oranges, &c., which are seen in the summer season in the markets, are brought from the mainland. There are two fruits, however, cultivated on the island, which are of considerable excellence; the one is called by the Chinese Yang-mae; it is a scarlet fruit not unlike an arbutus or strawberry, but having a stone like a plum in its centre; the other is the Kum-quat, a small species of citrus, about the size of an oval gooseberry, with a sweet rind and a sharp acid pulp.

"The new plants of the island were seen in flower this season for the first time. Early in the spring the hill-sides were covered with a beautiful *Daphne* with lilac flowers (*Daphne Fortunei*), and the *Azalea ovata*, certainly one of the finest and most distinct species which I have introduced. *Weigela rosea*, one of the

most beautiful shrubs of northern China, which was first met with in the garden of a mandarin near the city of Tinghae on this island, was this spring loaded with its noble rose-coloured flowers. *Buddlea Lindleyana* was also seen this year in great perfection growing in the hedges on the hill sides, often side by side with the *Glycine sinensis*.

"Ningpo is about forty miles west from Chusan, and is situated on the mainland. My visits here at different times during this summer were attended with much less difficulty than in the preceding autumn. I was now beginning to speak a little Chinese, and was perfectly acquainted with the town, and the whole of the places where the different mandarins' gardens and nurseries were situated. This was of much importance, as I was able to save so much time which used to be formerly spent in fruitless inquiries. The mandarins were particularly inquisitive at this time about every thing which related to the movements of the English, or other foreigners, who were likely to establish themselves at their port; and as we were able to keep up a conversation in Chinese, I soon found that my frequent visits were very agreeable to them. The nurserymen too, having found, I suppose, that my money was as valuable to them as that which they received from their own countrymen, were no longer shy, but most anxious to sell me any plants which I wanted.

"The gardens of the mandarins, although small, were extremely gay, particularly during the early months of the year; and, what was of more importance to me, contained a number of new plants of great beauty and interest. On entering one of the gardens on a fine morning in May, I was struck with a mass of yellow flowers which completely covered a distant part of the wall; the colour was not a common yellow, but had something of buff in it, which gave the flowers a striking and uncommon appearance. I immediately ran up to the place, and to my surprise and delight found that I had discovered a most beautiful new yellow climbing rose. I have no doubt, from what I afterwards learned, that this rose is from the more northern districts of the Chinese empire, and will prove perfectly hardy in Europe. Another rose, which the Chinese call the 'five-coloured,' was found in one of these gardens at this time; it belongs to the section commonly called China roses in this country, but sports in a very strange and beautiful manner. Sometimes it produces self-coloured blooms—being either red or French white, and frequently having flowers of both on one plant at the same time—while at other times the flowers are striped with the colours already mentioned. This will also be as hardy as our common China rose. *Glycine*

sinensis is often grown on a flat trellis in front of the summer-house, or forms a kind of portico, which affords a pleasing shade from the burning rays of the summer's sun. Entwined with one of these trees I found another variety, having very long racemes of pure white flowers, which contrasted well with the light blue of the other. I immediately asked permission from the old Chinese gentleman to make some layers of this fine plant, and I am happy to say that one of these is now alive in the garden at Chiswick.

"After seeing the different gardens and nurseries in the town, I generally left Ningpo for the hills in the district. The natives in this part of the country, as I have already stated, are quite a different race from those in the south, and perfectly harmless in their dispositions: I have often resided amongst their mountains for weeks at a time, and never had any reason to complain of the treatment I received at their hands. The temple of Teintung, a large monastic building situated amongst the green-tea hills about twenty miles from Ningpo, was a favourite place of resort, owing to the peculiar richness of the vegetation in this part of the country. Here many of the trees and shrubs, which were only found in gardens in other places, were wild on the hills and in the hedges. The *Forsythia* already named was common on the road-sides, and was covered with its bright-yellow flowers in early spring. Several species of *Viburnum* of great beauty, and one *Hydrangea*, were also met with here, besides all the other plants which have been already noticed as abounding on the hills of Chusan. *Cryptomeria japonica* formed one of the most beautiful and stately trees which are found on the hill sides; it grows about as tall as a common pine, the stems are perfectly straight, its branches hang drooping down in a most graceful manner, and altogether it is not unlike the *Arancarias* of Norfolk Island or Brazil, but probably much more hardy. The wood possesses great strength and durability, and is highly prized by the higher classes amongst the Chinese. *Paulownia imperialis*, *Lilium japonicum*, and several other well-known Japanese plants, are also indigenous to this part of China, which shows that the vegetation of the two countries must be very much alike.

"I arrived at Shanghai this year on the 18th of April, and spent two or three weeks there at different times during the season. My principal object was to see all the plants in the different northern districts as they came into flower, and it was therefore necessary that I should stay as short a time as possible in one place at one time. I have already mentioned that I purchased a collection of Tree Paeonies during my first visit in the

winter of 1843, which were said to be very splendid things, and entirely different in colour from any of the kind which were known in England. The history of this purchase is rather amusing, and affords a curious example of the kind of duplicity which I had to contend with. I had drawings with me of various Moutan Pæonies which were said to exist in the country; and when these were shown to a Chinese nurseryman in Shanghai, he said he could get them, but that they were only to be procured at a place called Soo-chou, distant nearly a hundred miles, and that it would be rather expensive to bring them down. I asked him how many kinds there were, what were the colours of their flowers, and finally expressed a wish to have a certain number of each. He told me very gravely that he would undertake to send to Soo-chou for them providing I would pay him at the rate of a dollar for each plant. I was too anxious to get them to make any objections to the price, which, after all, was not much out of the way, if they were to be brought about a hundred miles. In the stipulated time the plants were delivered to me in excellent order and the money was paid. They were then taken down to Hong Kong and dispatched to England, where they arrived in very fair condition. I had of course no opportunity of seeing their flowers at that time, and was now (April, 1844) anxious to get some more in flower, and intended to send my old friend back again to Soo-chou for another collection, stipulating however this time that all the plants should be in flower in order that I might have an opportunity of seeing their colours. One morning, however, as I was going out into the country, a short distance from Shanghai, I was surprised by meeting a countryman with a load of Moutans in full bloom. The flowers were very large and fine, and the colours were dark purples, lilacs, and deep reds, kinds of which the very existence was always doubted in England, and which are never seen at Canton. Dr. Lockhart, an excellent Chinese scholar, being with me at the time, we soon found out the name of the Moutan district; and from the state of the roots in the man's basket, I was quite certain that the plants had not been more than an hour or two out of the ground, and that therefore the distance from Shanghai could not exceed six or eight miles, a surmise which we afterwards found to be perfectly correct. This was doubtless the place where my nursery friend had procured his plants in the autumn before, and where he would have gone again had I not been lucky enough to find that I could easily go there myself. Indeed I afterwards discovered there was no Moutan country in the vicinity of Soo-chou, having met a man

from that place in the Shanghai district, where he had come for the express purpose of buying Tree Pæonies to take home. I was now out in the Moutan district daily during the time the different plants were coming into bloom, and secured some most striking and beautiful kinds for the Horticultural Society.

"Several very distinct and beautiful Azaleas were added to my collections during this summer, at Shanghai, as well as many other plants of an ornamental character which have not yet been described. Many of these things are expected to prove hardy enough to thrive in the open air in this country, and others will make excellent plants for the green-house. My researches this year were extended for some distance into the interior, which is intersected in all directions by canals—in fact the canals in the north of China are the highways of the country, and the boats are the carriages. The heat during the months of July and August was very oppressive, the thermometer frequently standing at 100° Fahr. in the shade.

"In the autumn, after the seeds which I had marked were ripe, I got my collections together and sailed for Hong Kong, in order to make my shipments for England. These consisted of twenty-one glazed cases of living plants, and one bag of seeds, which were sent home in four different vessels. Many of the plants were of course duplicates of the best species which were shipped in the spring of the same year, but a number of them were now sent for the first time. Amongst the latter the following may be noticed as arriving in England alive for the first time:—

Tree pæonies, with purple and lilac flowers, &c. (twenty plants).	Campanula sp. (Lilac)
Spiræa prunifolia fl. pleno.	Fortunæa chinensis
" sp.	Lycopodium Willdenovii
Calystegia pubescens fl. pleno	" cæsius
The Chinese five-coloured rose	Gardenia florida, var. Fortuniana
Rosa sp. (a curious anemone flowered kind)	Pinus sp. from Japan
Edgeworthia chrysantha	" " Ningpo
Hydrangea sp. from the woods of Tein-tung	Juniperus sp. North of China
Rhynchospermum jasmynoides	Bamboos (northern varieties)
Acer sp. from Japan	Viburnum sp. These are fine shrubs, with large round heads of flowers like the Gueldres rose
Mandarin orange (true)	Shanghai peach—a fine large variety

and several other plants to which I cannot at present give any names.

"The last shipment at this time was made on the 31st of December, 1844. As it was still winter in the northern provinces, and as nothing could be done in the south, I determined to go over to the Philippine Islands for a few weeks, and accordingly sailed for Manila in the beginning of January, 1845.

As far as I had an opportunity of judging, the vegetation of Luçonia has a great resemblance to the Island of Java, and other parts of the Malay Archipelago. In the woods I was surprised to find so many species of the genus *Ficus*; I should imagine that nearly one-half of the indigenous trees belong to this family.

"After some trouble I discovered the locality of the beautiful *Phalænopsis amabilis*, and procured a large supply of the plants for the Society. As my visit here was a secondary object, I had very little time to spare, and therefore took every means in my power to make the most of my time. I was in the habit of making an Indian's hut in the wood my head-quarters for a certain time, where I held a sort of market for the purchase of orchidaceous plants. The ground in front of the hut was generally strewed with these plants in the state in which they had been cut from the trees, and often covered with flowers. The *Phalænopsis*, in particular, was very beautiful at this time. I was most anxious to get large specimens of this plant, and offered a dollar, which was a high sum in an Indian forest, for the largest specimen which should be brought to me. The lover of this beautiful tribe of plants will easily imagine the delight I felt when I saw two Indians approaching with a plant of extraordinary size, having ten or twelve branching flower-stalks upon it, and upwards of a hundred flowers in full bloom. 'There,' said they, in evident triumph, 'is not that worth a dollar?' 'You have gained the dollar,' said I, as I paid them the money and took possession of my prize. The same plant is now in the garden of the Horticultural Society; and although a little reduced, in order to get it into the plant-case at Manilla, is still by far the largest specimen in Europe.

"I found few other plants of value, except perhaps two species of *Aërides*, which I have never yet seen in flower; these, however, with some other Manilla plants, are now in the Garden at Chiswick. Upon reference to the Garden Lists on my return, I find that out of four cases of Manilla orchideous plants no fewer than forty-five specimens of the *Phalænopsis* have been given away to the Fellows of the Horticultural Society.

"My allotted time having expired, I sailed for my old station in the north of China, and arrived there on the 14th of March. My principal object now was to make another collection of all my finest plants, which I intended to bring home under my own care. I had written to the Secretary of the Society, requesting to be favoured with full returns of the state in which my various shipments had arrived in England, and these lists were now coming to hand by every mail. When I found from these lists that any of the species were

perfectly safe, I discarded them from my collections, and only kept the kinds which were either newly discovered, or those which we had been so unfortunate as to lose during the voyage, or which, if not lost, were in doubtful condition.

"Foo-chow-foo, a large city on the river Min, was visited this summer for the first time, as well as some of the black tea districts in that part of the province of Fokein. The plants in this district, with a few exceptions, were the same as I had already found either in the south or in the northern part of the empire. This was naturally to be expected, as this part of the country lies about half way between the province of Quantung in the south, and that of Keangsoo in the north of China. When my examination of the country was completed, there was no English vessel in the Min, and I was therefore obliged to take a passage in a Chinese junk, which was bound for the city of Ningpo. On our voyage up the coast, we were attacked by fleets of pirates on two different days, and had I not been well armed we must have fallen into their hands, where in all probability my career would have been soon terminated. I had a severe attack of fever at the same time, and altogether was in a most deplorable condition when I reached Chusan, where my countrymen were stationed. Having the greater part of my collections in the country near Shanghai, I was most anxious to know in what state they were; and finding an English vessel about to sail for the Yangtse-Kiang, I immediately crawled on board in the best way I could, and, with a fair wind, we soon reached our destination. It would be unjust and ungrateful not to mention here the kindness and hospitality of Messrs. Mackenzie Brothers and Co., merchants in Shanghai, whose house was open to me as my home, and where, by the skill of Dr. Lockhart and Dr. Kirk, the fever gradually left me, and I was enabled to attend to my collections.

"In addition to the plants discovered last year, I obtained about this time some valuable species from Japan. Every means had been used during my early visit to Shanghai to induce the Chinese nursery-gardeners to import for me Japan plants in the junks which annually trade between Chapoo and that country. Several collections had been brought me, but none of any value until this autumn, when some *Azaleas* and other plants of much interest arrived.

"The whole of my plants from the districts of Foo-chow-foo, Chusan, and Ningpo, being now brought together at Shanghai, I got them packed, and left the north of China for the last time on the 10th of October, on my way to Hong Kong and England. When I arrived at Hong Kong, I despatched eight glazed

cases of living plants, the duplicates of which and many others I intended to bring home under my own care. I now went up to Canton, and took my passage for England; and with eighteen glazed cases filled with the most beautiful plants of Northern China, sailed on the 22d of December. We arrived in the Thames on the 6th of May, 1846, having been three years and three months absent from home.

"The plants arrived in excellent order, and the following kinds, amongst many others, may be noticed as having been imported this year for the first time:—

Glycinesinensis, with white flowers	Oak from Chusan
Azalea obtusa, from Japan	Camellia hexangularis (true)
" sp from Japan	Camellia 'star,' ? a variety of hexangularis
" four species from the north of China	Spiræa sp.
Prunus sinensis (flore pleno albo)	Lycopodium sp. ('Manneen chung' of the Chinese)
Dielytra spectabilis	Kum-quat, a curious small orange
Berberis (Mahonia) Fortunei	130 plants of Tree Pæonies, consisting of twelve or fourteen varieties, having flowers of various shades of purple, lilac, dark red, and white
Scutellaria sp., a fine herbaceous plant with blue flowers	Seeds of the true Shantung cabbage—a very valuable northern kind.
Rose, the fine double climbing yellow	
" double white climbing variety	
" dark red do.	
" purple garden kind	
Pinus sp., from Japan, two varieties	

"The number of plant-cases altogether amounted to sixty-nine, besides packages of seeds, some of which arrived in better condition than could have been expected, and others in worse. As all my fine plants, however, were sent several times, I find, upon looking over my lists, that there are only two of value which have really been lost to the

country: the one is a Rosaceous shrub found on the hills of Chekiang, and the other is a curious Ranunculaceous herbaceous plant obtained in a garden near Shanghai; there are dried specimens of both amongst my specimens in the Garden of the Horticultural Society, which may one day lead to their being again introduced."

At the present day whatever relates to China and the Chinese has a degree of interest peculiar to itself; and this is quite as much the case with relation to gardening and horticultural matters as with matters of more general importance. Indeed China has always been looked upon as a land of flowers. Many of our more beautiful plants have been thence received; and from what knowledge was possessed of the products of a country so little known as China, it was rightly expected that many more might be obtained.

The Council of the Horticultural Society in their Report, observe, that "the occupation of Hong Kong and Chusan, and the opening of new ports in the Chinese empire, appeared to present so favourable an opportunity of acquiring valuable plants, that the Council deemed it advisable to send a collector to that country, which has for so many years been the richest of all fields in a horticultural point of view. In the spring of 1843, Mr. Robert Fortune, the superintendent of the hot-house department in the Society's Garden, having offered himself for the service, he was engaged to spend two or three years in exploring such districts as were accessible to Europeans. He sailed on the 26th of February, 1843, arrived at Hong Kong on the 6th of July, 1843, left it on his return to Europe on the 22d of December, 1845, and arrived in England early in June."

GARDENING CALENDAR FOR SEPTEMBER.

THE CONSERVATORY.

THE nights will now probably be getting cooler; and as the plants in the conservatory must not be checked by being subjected to conditions of this kind, care should be taken to have the house properly closed at night, and brought under a regular system of ventilation during the day-time. Artificial heat will not be needed yet, and in some seasons when the weather is fine it will not be till quite the latter end of the month that there will be any necessity for closing the house; so that this must be entirely regulated by the nature of the season. Syringe the plants and damp the house only in the morning. Give some air every day, and as much as possible

on fine days, but close early; some air will be beneficial at night, if the nights are warm, even after the practice of closing has commenced. Shading may be entirely dispensed with.

Watering.—Except in the case of plants in bloom, all others must have their supply of water gradually limited, as the season declines. From this time forward, water is best applied to all the plants in the morning. Be more than ever cautious not to allow water to stand in the feeders in which the pots are placed.

Autumn flowering plants.—The various kinds of autumn flowering plants which have

been prepared during the summer for the decoration of this house, should now be encouraged as much as possible, so as to be duly prepared to fulfil the purpose they were intended for. If they have been growing in cool pits, give some of them (in rotation) a little increase of heat.

Creepers.—These require good attention to keep them from running into confusion. When they have done flowering, or nearly so, thin out the shoots a little, that the rest may have a better opportunity of maturing themselves. Some of the earlier habited kinds may be pruned, for flowering early next year. Where they are still in bloom, it is by no means desirable to sacrifice the flowers, so that all that can be done in their case will be to check the barren shoots, and prevent their running into a confused mass.

Chrysanthemums.—Where these have been planted out in order to obtain large strong plants, they should now be taken up very carefully and potted, and placed in a close house till they have recovered their move. If they have been grown in pots, give them a final shift. They will be benefited by supplies of clear manure water. Very neat interesting plants are formed by taking off the points soon after the buds are formed, and striking them as cuttings.

Tropaeolums.—Where any of the bulbs exhibit signs of growing, they must be potted for flowering next April: give them full-sized pots at once. Nothing suits better for a trellis for these plants than an informal twig—a young tree of larch of suitable size is excellent for the purpose.

Liliums.—The bulbs of longiflorum and eximium should be potted towards the end of the month, for blooming in June; so ought also the different varieties of lancifolium—which, by the bye, are quite hardy, though splendid plants for the conservatory.

Cyclamens.—The spring flowering ones should be repotted, and put all right for the blooming season. The others may be gradually allowed to become partially dry during their season of rest.

Oxalis.—Many of these may be potted for early flowering. *O. cernua* is a fine yellow flowered one: *O. versicolor* is also a favourite: and there are many other fine ones.

Cape bulbs may be potted—at least some roots of them—for early flowering.

Hardy bulbs, such as Hyacinths, Narcissus, and others of a similar class, ought to be rapidly advancing, if intended for forcing. Get some more potted.

Bignonia jasminoides.—Cuttings of this splendid climber—the true one—taken off now will root readily, and will blossom through next summer in very small pots.

THE GREEN-HOUSE.

During the greater part of this month, green-house plants—excepting the very delicate species—may be allowed to remain out in the open air, and they will be benefited by the exposure, provided they can be sheltered from strong winds and heavy rains. Towards the end of the month, they will, however, require to be removed to some intermediate place of shelter for a time, or at once to the green-house; or if neither of these courses is adopted, the plants must every night be protected, so that they may not be liable to injury from slight casual frosts. It is only the tenderer ones that require to be protected just now, and for these a cold frame will answer well enough for a few weeks, especially if in that time the green-houses are required to be cleaned out and painted, so as to be clean and fresh for the winter. The more hardy green-house plants will bear exposure in ordinary seasons till near the end of October—sometimes later, but any that are at all liable to injury from cold or wet ought to be placed in safe quarters by the end of this month. As before observed, either the green-house, or a cold pit, will afford them the necessary protection.

HOUSE FOR MISCELLANEOUS PLANTS.—

Where this is devoted to Balsams and other tender annuals, or to the growth of stove plants thinned out from among the general collection, it must receive corresponding management, as already fully described. The principal points are to limit the admission of cold air, as compared with green-house treatment; to keep up the temperature to an average of seventy degrees by closing early in the afternoon, and to maintain a moist atmosphere by frequently syringing the plants, pots, walls, and pathways, indeed every available surface. If the weather is hot these plants require plenty of water at the root; but in the case of the stove plants it is nearly time to think of diminishing their supply.

The plants ordinarily belonging to this house, will now be in two situations; the tenderest in pits where they will receive partial protection; the others may still remain in the open air, but it is desirable to keep heavy rains from saturating the soil in which they are growing. If this arrangement can be made none of the plants need be placed in the house this month, but if not, the tenderer sorts must be taken in, or sheltered in some effectual way.

Cacti.—Where these have been placed out doors, thoroughly exposed to the sun, in order to ripen their growth (which should always be done), they will now require either to be removed under shelter, or protected in some

way, from wet chiefly, but also from cold. This applies to the free flowering kinds, such as the species of *Epiphyllum* and *Cereus*; the Melon-Cacti are not so frequently placed out doors.

Winterflowering Plants of all kinds should now meet with especial attention. Have the blossom-buds removed incessantly even yet, so that none of the energies of the plants may be expended on the development of flowers before they are actually required. They require to be well sheltered in a frame, that is, protected from all rain and cold, but allowed plenty of free air, by tilting up the sashes, or removing them entirely when the weather is mild.

Chrysanthemums.—These are the chief of autumnal flowers, and plants will be required for decorating not only this house, but also the conservatory and the other green-houses. If they are grown in pots, and are not yet placed in their blooming ones, this should be done. If they are planted out, they must now be taken up and potted; in doing this some care is necessary that the plants are not checked, nor the leaves turned yellow; they must be taken up with as much earth and roots as possible, potted comfortably in pots of sufficient size, placed in some sheltered, shady situation, and well supplied with water: if this is done, they will not suffer much. For a supply of dwarf plants, the tops of the blooming shoots may either be layered or planted as cuttings; these are very useful for decorative purposes. *Chrysanthemums* must be well watered, to keep the leaves fresh and green; they are benefited by clear manure water once in two or three waterings. The shoots should not be topped later than the middle of this month, unless it is done for the chance of throwing a few very late blooms.

Primulas.—Repot these in succession, so as to furnish blooming plants through the winter. It is a good plan not to bestow much pains on those which have not thrown flowers; for by attending to this, the very best varieties may be selected; and as these plants vary very much when raised from seed, it is worth attending to. There is scarcely a flower in which the advantage of saving seeds only from those which bloom in good "strain" is more apparent in the progeny than in this.

Dutch Bulbs.—These ought to be purchased and potted this month. Independently of the advantage of securing the finest bulbs, there is no comparison between early and late planted ones. In the former case, they get thoroughly established, the roots being numerous and active before they are excited. In the latter case, the growth of leaves gets excited before there are many roots formed to meet the demand. In potting, place the top

of the roots about level with the top of the pots; and after potting, plunge them in a sheltered, dry-bottomed place, four or six inches deep, in old tan or coal ashes, or some similar porous material.

Cape Bulbs, if not potted last month, should be got in now, and the pots set on some of the shelves in the green-house. Water them with moderation until they begin to grow. It is a good plan to lay some moss, just damped, on the surface, to keep it from drying, and thus prevent much of the necessity of applying water.

Mignonette.—Sow a good batch in five-inch pots, in light sandy loam, and let them stand in a frame with plenty of air for some time: by and by they must be removed to the green-house. Thin out the young plants, so that they stand in a circle, about an inch and a half apart, near the edge of the pot.

Neapolitan Violets.—Early in the month get these potted into pots corresponding with the size of the plants; they may be kept during winter in a frame well protected in cold weather, or set in the front of the green-house.

Young Plants of various kinds will require a good deal of attention in watering; too much must not be given to make them gross, or they will be liable to die off in the winter. The medium course in this case, as in many others, is much the best.

HEATH-HOUSE. — *Ericas*. — Preparation must be made for getting the Heathis housed, adopting the principle above explained, namely, to commence with the most delicate and the small plants, leaving the more robust kinds for a later opportunity. A frame will answer for these; but as the frames will perhaps be multifariously occupied, it will be as well to occupy this house at once. For some time after the house is thus occupied—this depending, of course, on the state of the weather—it should stand as perfectly open at the side as possible, in order that the plants may benefit by thorough and free ventilation. The protection they require is not from the out-door temperature yet, but from the rains which often occur at this season. Once for all, it may be remarked that the state of the season in this respect—that is, whether wet or dry—will make nearly a month difference in the time that the plants will require protecting. A fine mild autumn is as congenial to green-house plants as any period of the summer; however, if ever so fine, the delicate kinds ought not to be trusted out after the latter end of this month, for the change sometimes is sudden, and the period then brings its own peculiar labours.

Watering.—The most important practical operation we shall have to notice for some

time to come, is that of watering. Now, the supply must be limited; give no more than *enough to moisten thoroughly* the mass of earth. This is, in fact, something like the state they should be in for the greater part of the year; it is the extent of evaporation in summer, and its almost total absence in winter, that makes all the difference as to the application of water. Thus it will be evident that the actual amount required, as well as the frequency of its application, will vary with the changes of the seasons; and as the seasons do not change suddenly, but by regular gradations, so must the supply of water be gradually varied, to meet the wants of the plants. As soon as the limitation necessary at the present period comes into full practice, the soil towards the bottom of the pots will be liable to get dry, while the surface is moist; and this, not being observed, gets worse and worse, until the plant dies suddenly, and inexplicably to all outward appearance, but in reality is starved for want of moisture. This must most scrupulously be watched against; and it is in reference to this point that the advantage of the West Kent Garden-pot, and the contrivance for potting, previously noticed, partly consists. Mr. Barnes, one of our best cultivators, always keeps small probes, formed of stout iron wire, close at hand; and a few holes carefully made with these through the mass of earth, will allow the water to pass downwards, and moisten the bottom part of the mass; but this must be done very carefully.

Mildew.—If any of the plants are affected by mildew, they should be dusted with dry flour of sulphur, without delay; and great attention should be given that all routine matters, as watering, airing, &c., are duly performed.

CAMELLIA-HOUSE.—The Camellia-house must now again be fully occupied, as little advantage is gained from exposing these plants for too long a period. The plants will, however, still enjoy an abundance of air; in fact, the house need not be entirely closed even at night before the latter part of the month. The earliest forced plants of last year will have their bloom buds considerably advanced, and they should be kept in the warmest part of the house, for they will soon be required again for the forcing-house, to give a few early flowers. The others require little other attention after they are properly housed, beyond very careful watering and good ventilation.

PELARGONIUM-HOUSE.—The management of this house was so fully entered on at p. 351, that there is less than usual to say now, inasmuch as the same general features of treatment, modified a little to suit the more

advanced state of the season, will still be applicable.

Pelargoniums.—As they go out of flower, the plants must be cut down, and when they have shot out afresh, repotted into smaller pots, the young shoots being thinned to a proper number, conveniently placed to form a handsome bushy plant. If more stock plants are required, the cuttings may be planted several in a pot, in which they may be allowed to stand during the winter. Those intended for autumn and winter blooming must be so managed, as regards stopping and removing the flower-buds, that some of them may be had in succession throughout this period of the year. The best plan is to discontinue stopping a certain number, proportionate to the stock, say every fortnight. Seedlings should be encouraged, so as to get strength to bloom finely by the spring. Rooted cuttings should be potted singly into pots, in size proportioned to their strength.

Calceolarias.—The latter end of the month is an excellent time for propagating Calceolarias by cuttings, consequently the stock should then be filled out; and as soon as the young plants are rooted they must be potted singly, and from time to time repotted to get them strong enough to bloom finely in the following spring. Get the seedlings potted on, for blooming in good time in the spring.

Cinerarias.—The earliest plants of these excellent winter flowers should be helped forward by being repotted, and furnished with a little weak clear manure water, once in a week; and successional supplies must be prepared by potting a few of the forwardest plants at short intervals of time. If the opportunities that have presented themselves of obtaining a sufficient number of stock plants, have not been taken advantage of, young plants which will come in late, may still be had by slipping off some of the suckers from the base of the growing plants.

Fuchsias.—We have little to add respecting these. The plants which are still blooming will be assisted greatly by occasional waterings of manure water.

THE PLANT STOVE.

The majority of stove plants will now have reached the maximum of their growth, and instead of being encouraged to continue growing on, a gradual suspension of the stimulating agencies,—heat and moisture,—should take place, so that the next month or two may be devoted to the maturing and perfecting of the growth they have already developed. Of course, those plants which naturally bloom at this season of the year, or later, are not included in these directions; neither are those which are being somewhat artificially induced

to bloom out of their natural season, for the purpose of supplying a few flowers during winter. These are exceptions, and require to be treated pretty much as already recommended for growing and blooming plants,—perhaps a little less liberally, but still on the same general system. The rigid treatment which is now to commence—insensibly, as it were—is intended to apply to those, in fact, which have done with blooming for the present, and which have been revelling in the production of fresh branches, to bear the next crop of flowers.

Temperature, &c.—The atmosphere must not be quite so much under the influence of the external air; the first advances towards exclusion must be made, and though it will seldom be necessary to light fires before next month, yet the internal temperature must be kept up to its average point—say 70 degs. by day, and 60 degs. at night—by shutting the house early in the afternoon, giving air less fully, though scarcely less freely, throughout the day, and avoiding, at all events, such complete exposure to the external air as may, till recently, have been indulged in. And though, for the purpose of ripening and maturing growth, a comparatively dry atmosphere is required, yet this must not be suddenly commenced: at first, *nearly* as much moisture as formerly must be distributed in the atmosphere and applied to the soil; this amount must decrease and become smaller gradually, by degrees, until the rigidity of winter management is reached.

Shading.—For the reason already named—that is, the necessity of ripening the growth produced—shading must be given up, if maintained so long, and the plants must have as much light as they can receive; but even this is not to be done suddenly; the change must be effected by gradations.

Watering.—As a *part of the means*, towards producing the *end* in view, the direct application of water must be governed by the same principles of limitation and reduction as already spoken of in reference to atmospheric moisture and heat; and the reduction in this case, too, must be brought about gradually. When the health of plants is studied, they will not in any case be submitted suddenly to changes which are of very great moment, or which are likely to affect them much.

Cleaning.—Before the plants are arranged in their winter quarters, which must be thought about next month at least, an opportunity should be taken to have them thoroughly cleaned, not only from any dirt, dust, or filthiness which may have accumulated on them,—which ought not to have been allowed,—but also, as far as practicable, from insects. If this is done now, and well followed up through the winter, very foul plants may be expected

to commence their next season free from pests of this nature. Besides the advantage to the plant, the advantage in appearance is very great indeed.

Ixoras.—those fine shrubs, with hydrangea-like heads of scarlet flowers,—should, after having been induced to make their growth in a warm and moist atmosphere, be kept in a temperature of about 50 degs., until they are started next season for flowering.

Begonias.—Some of these, especially *B. manicata*, and *B. hydrocotylifolia*, which flower beautifully in spring, and are very handsome plants, should about this time be potted, and set to grow on steadily through the winter. When plants—as in the case of these—are set to grow in the winter, they must be very carefully watered; it would greatly injure them to get too much; at the same time, they ought to have enough.

Achimenes picta, &c.—This fine plant, and its ally, *Gesnera zebrina*, should be encouraged to grow; and if any late plants, raised from cuttings of other species of *Achimenes*, or *Gesnera*—*G. oblongata*, for example—can be had, so much the better, as they will afford some variety. *Gesnera oblongata* is a good winter plant, and may be grown on purpose.

Oleanders.—Cuttings of these may be planted now to furnish young plants for forcing into flower in the spring. If kept in the green-house during winter, and potted and removed to the stove in March, they will flower in April.

ORCHIDACEOUS HOUSE.

With the decline of the season, a corresponding course of treatment must be adopted. The plants that commenced their growth at an early period of the season will have, in most cases, attained maturity; and when this is the case, they must be treated with a limited supply of stimulants. Others, which did not commence growing so early, or which take a longer period in arriving at a mature state, will require liberal treatment until that stage is attained, when they, too, must be gradually brought to a state of rest. Those which in the development of their natural characteristics, seek to grow away now, must be encouraged, for it is injurious to check them; but the object of the cultivator should be, in great measure, to mould their period of growth in accordance with our seasons. If only one house is possessed, this is essential: it is less urgent where there are two, as, in the latter case, much more may be done, so far as treatment is concerned, to cause the plants to bloom in succession throughout the year.

Temperature, &c.—For a growing atmosphere, 75 degs. with moisture must be kept up; and this will, in great measure, be sup-

plied by sun heat, if the house is kept moderately well closed. If, however, there is little sun, and the weather is cold, recourse must be had to the assistance of fire heat; but it must be recollected, that a cool night temperature, 65 degs. at most, is more beneficial than a high one, which, if carried very high, is in fact highly hurtful to the plants. The cooler house may range from 65 to 70 degs. by day, and 55 to 60 degs. by night. Moisture must be regulated by the fact whether or not the plants are growing; if they are growing they must have a moist, growing atmosphere, as already often pointed out; but if they have done growing, and are either resting or being brought to a state of rest, they require a drier atmosphere. For the resting plants, proportionally more air may be admitted than has generally been recommended hitherto; and less water must be used in direct application to them.

Shading.—This may now soon be dispensed with, but it must be discontinued gradually, and not suddenly; unless, indeed, advantage is taken of a dull period of weather, to leave it off entirely.

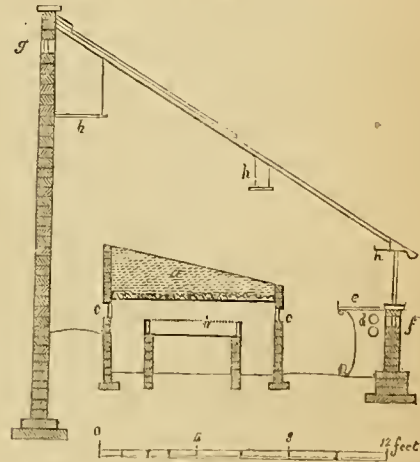
Potting, &c.—The present time affords a good opportunity of examining the soil and roots of such of the plants as are not in a state of active growth, with a view to effect whatever changes may be deemed desirable, previously to their again commencing to grow. The main consideration should be, not unnecessarily to disturb them, but when they require transferring to fresh pots, or where the soil requires renewal, or, again, in the case of those on blocks, if the addition of fresh moss about the base of the plant is at all requisite, this will be found a convenient time to get it done. Before they are disturbed in this way, both the old and new soil, or material, should be allowed to get comparatively dry; so that no accumulation of unnecessary moisture may take place about the plants.

Soils.—An interval of dry weather should be selected to get together a supply of soils, and other materials for potting purposes; these should be kept under cover, or in such a situation as not to get soddened, or much charged with moisture. Peat soil of various texture, sphagnum and hypnum moss, half decayed tree leaves, sand-stone, broken charcoal and potsherds, are the principal materials required.

FORCING-HOUSE FOR FLOWERS.

As the operations in this structure will soon become numerous, it may be advisable at this time to consider what kind of house is best suited for the purpose. The situation in which it is placed should, of course, be as

much sheltered as possible; especially from the north and other quarters from which cold and strong winds may prevail during the winter and spring months; yet the place should be airy, well exposed to the sun, and by no means shaded, or encroached on by large trees. A south wall, or one inclining a little to the south-east, will be found to afford the best situation, if the other requisites are not too widely departed from. The size of the house must of course be regulated by the supply required; the slope of the roof should be not less than 34 degs., and may be a great deal steeper, say 56 degs. The advantage of this steepness of roof will be found in its receiving the rays of the sun more directly in winter, and also in its counteracting in a great degree the condensation of water on the inside of the glass, which water falls from every lap in flat roofs, doing material injury to the plants underneath. Even where very flat roofs are glazed with large panes of sheet glass, this drip is constant and very injurious. The annexed diagram represents the angle of the roof at 34 degs.; but of course, the internal arrangements are easily adapted to any other



slope. The central pit (a) is heated by a hot-water tank, (b) over which must be laid a flooring of slates, boards, or other material, on which to lay the tan, or other plunging stuff in which the pots of such plants as require bottom heat may be plunged. In the sides of the pit (c c) small doors should be inserted, so as to allow the moist air to enter the body of the house whenever requisite. A flow and return pipe (d) extends the length of the house under the front stage (e). The tank and pipes should be so arranged, that both or one only may be worked at once, as circumstances may require. The house should be furnished with ventilators along the front (f) and back (g) walls, let in below the wall-plates, so as to allow the whole of the sashes to be

fixed. These ventilators should be covered with coarse wove wire, or perforated zinc, so as to break or sift the cold air, ere it enters the house. And as the front air would pass between or over the pipes, it would be warmed before it came in contact with any of the plants.* In order to make the most of the room, shelves can be placed at *h h h*. If a narrower house than that here indicated be erected, it would be advisable to do away with the front walk, as it would in that case occupy too much of the most valuable space in the house. A trellis over the pipes would hold a quantity of small pots in pans, still allowing plenty of room for the heat and fresh air to ascend. The whole of the house and the ground round it, should of course be well drained; and where this is done, or where the ground admits of its being done from its natural dryness or other cause, the interior of the house may be excavated so as to have the pit, tank, and pipes below the level of the ground, and the front wall plate only a little raised above it.

Previous to commencing the forcing-season, great care should be taken to have the house in the most complete repair, so as to avoid as far as possible any accidents when once the plants are introduced. To this end, the heating apparatus, of whatever description, should be examined, and repaired if necessary, the plunging material renewed, and the house thoroughly repaired and white-washed, so as to destroy insects, and to leave all sweet and clean. Then towards the middle of the month begin to fill the house with the first batch of Lilacs, Ribes sanguineum, Deutzias, Roses, &c. leaving all possible air at all times, until about a fortnight before the fires are lighted, when the air should be gradually reduced. When the fires are once applied, then the application of heat, air, and moisture, must be so regulated as to prevent either from being in excess. If flowers are not wanted much before Christmas, then the most of these preparations may be delayed for another month.

Cacti should now be placed in a perfectly dry green-house, where they should remain until they are required for forcing, receiving no water unless they shrivel up too much.

Pinks.—The full stock of these and also of Picotees, &c., should be potted up this month, and plunged in frames or cradles, so as to be easily protected in bad weather. They must be carefully guarded against the ravages of slugs and snails.

* Many other arrangements for warming the external air, before it reaches the plants, will occur. A very good plan, with the rationale of the practice, is given in a memoir entitled "Theory and Practice applied to the Cultivation of the Cucumber in the Winter Season:" by T. Moore. London. Groombridge.

Violets, &c., should be treated in a similar way as recommended last month, choosing the strongest roots, and potting as many as are likely to be wanted.

Forget-me-not (*Myosotis palustris*) may also be potted up, and will do in a damper situation than most of the foregoing.

Hyacinths.—These and the other Dutch bulbs may generally be procured by the end of the month. As soon as possible a quantity of them should be potted in small pots, using a soil of sandy loam, and placing the pots under a north or east wall, they should be covered with about six inches of sifted coal-ashes. Here they must remain until the pots are filled with roots, when they may be removed, as wanted, to the forcing-house. The smallest pots should be used as being most convenient for decorative purposes, as well as occupying the least space at all times.

After treatment.—Inspect all the plants intended for forcing, regularly, allowing none to get out of shape, or overgrown by weeds, keeping them comparatively thin, especially the herbaceous ones. Remove or shelter the woody ones intended for the two or three early batches, so that they receive no more water than is sufficient to keep their buds and branches plump.

PITS AND FRAMES.

These may still be well occupied in sheltering such plants as may be intended for winter flowering; and, in fact, all the tenderer green-house species, which it has been deemed advisable not to hazard in full exposure to the wet and cold, which they would be liable to experience. Such plants—especially those of the latter class, require pretty free exposure during all the time the weather will permit, that is all day unless wet, and at night, when calm and warm. During wet days and cold nights the lights should be put on, but they had better be tilted up at the back to admit air. The plants preparing for winter flowering may be kept somewhat closer; the lights should be generally on the frames, except at very fine intervals, and air should be given by tilting them at the back.

Half hardy plants.—The propagation of a full supply of these must be carried out with energy, for, on the preparation made now, so far as materials are concerned, will depend much of the beauty and variety of the flower garden next summer. The plan of planting the cuttings pretty thickly in moderate sized pots should now be adopted. It is essential to success, that while the cuttings are not so far exposed to an arid atmosphere as to cause them to shrivel, they may not be kept too damp and close, for, in the latter case they will decay rapidly.

Alpine Plants.—Where these have not been separated and repotted, it may be done now, as previously directed. A collection of the variegated leaved species is a pretty and interesting feature in a rock garden.

WINDOW GARDENING.

Flowering plants which have from time to time been provided during the summer, will now require only the routine attentions of watering and keeping clear from decayed leaves. It may be well here to remark, that partially decayed leaves should never be hurriedly removed, as is done by some persons; the disfigurement caused by retaining them being less than the injury inflicted by removing them. Where proper attention is paid to watering, the prominent leaves will not die off, and therefore will not require removal.

Balconies.—It is now time to provide the potted evergreens, used for decorating the balcony during the drear of winter, when nothing but hardy shrubs will endure. This subject was noticed at page 18, and a selection of suitable plants pointed out. The plants used last season, if properly preserved, will answer the same purpose again, merely making what additions may be deemed desirable. Where a fresh stock has to be procured, get them as soon as possible and pot them, and then place them on the north side of a wall until they are wanted; attending them with proper supplies of water in the mean while.

Moss Vases.—We recommended these at page 355, as supplying objects of interest to take the place occupied, during summer, by various flowering plants. Where it is intended to introduce them, they should be got ready during this month at latest, as the duration of flowering plants may now soon be expected to terminate. The construction of the vases is sufficiently explained at page 355. In the arrangement of the plants, the natural habits and habitats of the species selected should, as much as possible, be imitated. In order to facilitate this, we here give the names of a few mosses which might be chosen, with a brief notice of the circumstances under which they are naturally found. *Dieranum glaucum* occurs on moors; *D. scoparium*, found in woods; *Splachnum ampullaceum*, found on bogs; *Orthotrichum crispum*, on trees and stones; **Bartramia pomiformis*, on heaths; *B. fontana*, in wet places; **Bryum roseum*, on heaths; **B. rostratum*, in sub-alpine situations; *B. ligulatum*, on moist banks; *Polytrichum undulatum*, on moist banks; **P. urnigerum*, by the sides of streams; *P. juniperinum*, on heaths; **Pissidens adiantoides*, in wet pastures; **F. taxifolius*, on

moist banks; **Neckera crispa*, on trees and rocks; **Hookeria lucens*, on moist banks; *Leskea complanata*, on the trunks of trees; **L. dendroides*, in bogs; *Hypnum undulatum*, on heaths; *H. purum*, on moist banks; **H. splendens*, on moist banks; *H. proliferum*, on moist banks; *H. praelongum*, in woods; *H. filicinum*, in bogs; *H. aduncum*, in bogs; **H. cupressiforme*, on trees and rocks; **H. crista-castrensis*, in woods. To these might very appropriately be added, if the vases are of moderate size, the smaller species of *Lycopodium*, or club-mosses, such as *annotinum*, **circinale*, *selaginoides*, **helveticum*, *denticulatum*, *lucidum*, **apodum*, &c., all found in boggy, damp places; and the three small transparent-looking ferns, **Hymenophyllum tunbridgensé*, and **H. Wilsoni*, and **Trichomanes speciosum*, which grow on dripping rocks. Of course, in any case, very few indeed of these kinds would be required to fill one vase, the above names being given to form a selection from. The most beautiful, distinct, and desirable, are those distinguished with an asterisk.

THE ROSE GARDEN.

Continue the examination of the budded stocks, and untie them, so as to free them from confinement, which checks their growth. If they have united, and begun to swell, or grow, the ties may be removed altogether; but as they advance to any length, so that the wind can disturb them, they must be supported, by being loosely tied to a stick, which must be fastened on the stock for that purpose, otherwise, the wind is often strong enough to break a bud out, the length of its shoot forming a perfect lever, against which a very moderate wind would be fatal. See also to the shoots that come out from any part of the stock, and cut them clean off. Shorten the branch on which the bud is placed to within two eyes of the bud; and let no part of the stock grow after the bud is fairly started. Look well to suckers, and remove them effectually, with part of the root to them; for if they are cut off so as to leave the lower part of the branch in the ground, several will spring up in the same place, and be constantly plaguing you. Cuttings of all the smooth-wooded kinds will strike freely on the open borders, if shaded and well-watered; but perhaps they will strike sooner in pots of soil, with half an inch of sand on the top. The cuttings being shortened up to a joint, and having at least one joint above, may be put in very close to the bottom of the sand, so as to just indent, but not go far into the soil under it. A glass must be put over them to touch the sand all round within the rim of the pot, and then they must be freely watered. These

will strike well in a cold frame ; but if there be slight bottom heat, and the glass be shaded with paper, or some other thin white substance, they will emit roots in a very few days. Pot off, or plant out any that have struck root, if in beds, to grow ; let them be in rows, about nine inches apart every way, unless room be scarce ; if it be, six inches would do till the autumn ; but nine inches is better, chiefly on account of there being more room to clear them from weeds, and to work among them. They should be planted in beds four feet wide, with alleys of eighteen inches between them. Continue the pruning of the China and perpetual sorts, which are greatly assisted by removing the decayed blooms, with a part of the branch on which they have grown, down, in fact, to the most likely looking eye for growing ; but remembering that, if there be a bud sure to spring, the shorter the branch is cut back to it, the better. Climbing-roses, on walls, poles, or trellises, must be looked over, and trimmed into form. The branches that are growing too vigorously must be shortened, or cut clean away, as they are sure to spoil the growth of those in the immediate neighbourhood, and, indeed, an extraordinary branch will sometimes spoil the entire remainder of the tree, if not caught in time. It is no uncommon thing to see a peach, or plum, or pear-tree, altogether stop growth, on the old head, in consequence of a new branch shooting from beneath it, and literally taking all the energies of the root to maintain it, to the exclusion of the ordinary head. These extraordinary growths, then, must be cut clean away ; they always weaken, and sometimes spoil the rest of the plant. You should visit the rose-nurseries this month, because many are in bloom now that have not been previously seen in flower ; and it is not too late for budding, if you look for the right sort of wood in a stock. Look back to the former month's directions, and repair any neglect that has been committed.

THE FLOWER GARDEN.

Anemones.—Beds may be prepared for these, as well as for ranunculuses ; and seeds of both may be sown, if not already done.

Annuals.—A few of the best of the North American annuals should be sown thinly out of doors to stand through the winter ; if for the borders, they may be sown in patches where they are to flower, but if required for beds, it is rarely the case that the beds can be so occupied, and then they must be sown in some sheltered spot, and transplanted in spring. The selection of kinds may be determined by fancy.

Auriculas.—Scarcely any plants are more injured than these by excess of moisture ;

it is therefore very essential that the drainage of the pots be frequently looked to, and also that the supply of water be limited to such a quantity as will keep them just equally moistened. The plants ought to be protected from rains ; and if not placed in their winter quarters (an elevated frame that will admit of full ventilation, both around and beneath the pots,) they may at once be taken there. Remove the dead leaves from the plants, and have the surface of the soil they are growing in occasionally stirred.

Biennials may be planted out in the situations where they are to flower.

Bulbs of various kinds may be taken up if required, and replanted.

Carnations.—The early layers which ought now to be rooted, should be potted in free sandy loam without manure. If they are to be grown singly, three-inch pots will do, but if in pairs, five-inch pots should be used. They may be kept in a dry cold frame through the winter ; such a frame as is used for auriculas will suit these also.

Crocuses may be planted for early blooming ; for effect, they should always be placed in patches, and not singly.

Dahlias.—These plants now require a good deal of attention in securing them against strong winds. If blooms are required for exhibition, thin the shoots moderately, and the blossom buds more freely. All the decaying blooms, except such as are required to furnish seed, should be removed as soon as possible. In dry weather, give the plants an occasional soaking of manure water.

Hyacinths.—The bulbs of Hyacinths intended for planting in beds, if about to be purchased, should be secured as soon as the importations arrive, and not delayed till planting time ; in this way better bulbs are secured.

Pansies.—Propagate these for preserving through the winter, either in pots, or in dry sheltered nursery beds. To get some of these early in bloom next spring, prepare a bed of light rich soil, and plant it with strong rooted cuttings ; shelter them by means of hoops and mats in rough weather, and they will progress rapidly and bloom early.

Perennials.—All the earlier blooming kinds may be taken up, and divided if increase is required. If this is not wanted, and they are grown too large for the position they occupy, take them up, reduce the size of the plant, and replant it : generally when the plant grows into a broad tuft, the outside portions are the most vigorous, and some of these should be replanted, instead of the central part of the tuft. The late flowering kinds now in bloom are not to be disturbed till the bloom is past.

Picotees.—The rooted layers may be potted in the same way as those of the carnation.

Pinks.—If the young plants are not planted out, it should be done early in this month.

Polyanthuses.—Seedlings large enough for transplantation, may be removed to a sheltered border, and planted a few inches apart to stand for blooming.

Seeds of such plants as it may be desirable to preserve should be gathered, and dried carefully, previously to storing them.

Seedling plants should be thinned if growing too thick; weeded, if weeds make their appearance among them; transplanted to where they are to bloom next year, if they are hardy biennials or perennials; and watered, if the weather proves dry.

Shelter.—Many delicate kinds of herbaceous plants, which are hardy enough to bear the cold of our winters, are much injured by excess of wet about them. They are much benefited by any shelter that will protect them from the heavy autumnal rains.

Transplanting, both of herbaceous plants and trees and shrubs, may be done at any time when convenient. Showery weather is generally regarded as best suited for the operation.

Tulips.—Prepare the tulip bed towards the end of the month, by turning and mixing the soil, adding fresh soil if required. The bulbs should also be examined, so as to be ready at planting time. The offsets may be planted.

Wallflowers.—The young plants of the double varieties, which should be kept in pots in the cold frames through the winter, should be set in a sheltered place, where they will not get too much wet. The seedling plants of the single kinds may be planted out permanently, or into beds to stand till the spring.

Routine.—Operations of routine become very essential now, to secure neatness and good order. Many of the plants will have past a blooming state, especially the annuals; these should be pulled up or cut down according to their nature, and the dead or littery-looking stems removed. The leaves of many deciduous trees will commence falling, and being scattered about by the wind, will require to be removed from the walks and borders. Mowing the lawns must not yet be discontinued. At this time of the year worm casts generally abound; these should be scattered in dry weather, by passing a long slender pole over the surface, and afterwards rolling. At the decline of the floral season, everything that can be done should be done, to make up for the falling off in flowers.

THE KITCHEN GARDEN.

Let attention be directed to the destruction of all sorts of vermin; to the saving of

all improved or good kinds of seeds; to making way for the winter or spring crops; to the turning up and ridging of heavy soils; and to keeping order and neatness in every place.

Angelica.—Sow now, if the seed is ripe, and plant out in spring: one ounce of seed will be quite sufficient, as it is seldom used.

Asparagus.—Cut off all decaying shoots, which will assist the ripening of those which remain: keep them free from weeds, &c.

Brocoli.—Make the last planting for the season; it will be useful, hereafter, and may be planted thickly, about the end of this, or the beginning of next month: it is a common practice to check their luxuriant growth by transplanting them, but this mode is questionable.

Cabbages.—Plant out a full planting, and prick out those in the beds upon sloping banks, and in sheltered situations.

Capsicums.—These must be neatly and closely nailed to the walls in order that they may ripen, which they will do if they have been at all well managed.

Carrots.—If there is no convenient place to store these, and the ground is not required, allow them to remain.

Cauliflower.—Sow again, and those ready to prick out should be transplanted, either into frames, or in a very favourable situation out doors. Those few which may be wanted very early should be put into single pots, from which they can be removed into larger ones. Keep them all from drawing up weak and tender, by removing the shading and giving plenty of air.

Celery.—Earth up in dry weather; and when water is required, it will be advantageous to give them liquid manure. It is not too late to make another small planting, to be used in spring.

Endive.—Plant out a few more, and treat the forward plantings as before directed.

Garlic.—If much in demand, it will be well to make a planting now.

Kidney Beans.—Protect the late crops from cold at night, by hooping over them and covering with mats.

Lettuce.—Plant out from the seed-bed those which are ready on a sheltered spot, and make another small sowing to be planted under hand lights, or in a frame.

Mushrooms.—Keep the house moist, and at night a little fire may be beneficial; keep the beds in a working state, by throwing over them a little close litter. Collect perpetually the droppings of horses, and have this well prepared, so that boxes, shelves, or beds may be made up at any time.

Onions.—The full crops of onions will be secured in a dry airy place; on the first opportunity presented by a wet day or so, it

is well to have them thoroughly cleaned, handling them gently, and laying them thinly over the floor; if they have been laid by in a dirty state they must be turned regularly. Lose no time in sowing the winter crop, if not already done: the ground must be well prepared by deep digging and rich manuring, and sow thickly, so as to have enough, and to spare for salads, &c.

Parsley.—Attend to thinning, hoeing and cleaning; it is well to have a good deal transplanted.

Parsnips.—The present month is still favourable for sowing parsnips: one half ounce of seed will suffice for a hundred square feet.

Peas.—Use the utmost care when gathering from the late crops, not to break the stems; hoe and keep the ground fresh about them: it will be necessary to protect them from birds, &c. by netting or similar means.

Potatoes.—More than usual care should be bestowed on this crop. Before they are stored see that they are well dried, and all diseased ones picked out; probably it is well, if the weather is dry, to lift them early if they are approaching ripeness. Where it is practicable, have the potato house free of drip, *well ventilated*, and with plenty of room, so as to prevent the necessity of laying them in large heaps: it is advantageous to turn them frequently.

Radishes.—Sow on a warm border, and cover with netting until the seed vegetates.

Salads.—Nearly all the small sorts will still require to be sown every ten days or so: a warm, airy border should be devoted to this purpose.

Spinach.—Sow yet, if not done, and thin, hoe, and encourage the earlier sowings; give this crop one of the best situations the garden affords.

Tomatoes.—Keep them from growing now, and concentrate the strength of the plants in the fruit: have them neatly nailed, and exposed as much as possible to the sun, by thinning the branches.

CUCUMBER AND MELON FRAMES.

Cucumbers.—If young plants are being raised in hot-beds for winter bearing, get them potted carefully in light soil, and grown on as strong as possible, ready for planting out next month: keep them near the glass; let the temperature range about sixty-five degrees; and give some air, but do it cautiously. Towards the end of the month prepare the fruiting bed in the usual way. If there is room in the stove to turn out two or three plants in boxes of moderate size, set a little above the flues, a supply of fruit may be had with much less trouble than if they

are grown in dung-beds, which during winter, when everything that can be done is done, is often found to be vexatious and precarious.

Melons.—Attend to the ripening off of the late fruit by withholding water, and keeping the lights closed to get as much heat as possible. After this month, melons are of little value.

THE FRUIT GARDEN.

Diligence, perseverance, and care must characterize the operations in the fruit department. Collect the various sorts of fruit as they ripen. The refuse will serve as traps for wasps, &c. Withhold water until the crops are all gathered.

Apricots.—The trees will now be clear of fruit, and this will be a favourable opportunity to give a last assistance to the thorough ripening of the wood by thinning out superfluous shoots, decayed leaves, &c. Syringe the trees if the red spider has made any progress.

Apples.—See that every kind is gathered at the proper season, and that they are all named, and neatly arranged in the fruit room, which should be clean, well ventilated, and shady.

Cherries.—The Morellos must be kept netted to protect them from birds, and should be always gathered when quite dry.

Currants.—If these have been carefully covered or matted up, it is probable that pretty good fruit will now be secured; but it must not be expected to be equal to what it was in proper season. As soon as the bushes are cleared, remove the coverings and dress the ground about them.

Figs.—The utmost tenderness must be exercised in handling this fruit: have the finer ones covered with gauze if the wasps are numerous.

Gooseberries.—As the bushes are cleared, take off all the coverings, and get the wood well ripened before winter.

Nectarines.—Attend to the perfecting of the wood, by giving it all the sun, air, and light possible; this do, by again looking over the trees when clear of fruit, taking away such shoots as can be spared.

Peaches.—Let the ripe fruit be carefully looked to; syringe the trees when the crop is cleared, if they are infested, but not otherwise: thin the wood and decayed leaves to the utmost, and get the wood, if possible, red and hard, ripe for next season.

Pears.—This is one of the most valuable of our dessert fruits: give it extra attention, and gather all the finer and keeping sorts by the hand separately; place them carefully in a basket lined with some soft material, and place them on the shelves of the fruit room with gentleness. Place them in order convenient for use.

Plums.—These may be kept for a considerable time in a cool place. Those from the walls require to be looked over frequently.

Strawberries.—Those intended for fruiting should be immediately put into their forcing pots, if not done long since: place them by the south wall, (either on boards or ashes, which prevents the ingress of worms,) and so close set as to prevent the sun acting on the pots, thus making the plunging of them unnecessary. It will be well now to withhold liquid manure until they are again called into an active state. Plant out those which have been pricked off into their respective places.

Vines.—See that no superfluous young shoots are allowed to grow away, and by every means give them sun.

General Remarks.—The transplanting of all sorts of trees may now be gone on with.

AURICULAS.

A VERY close examination of the flowers in all parts of the country by a distinguished cultivator of this favourite, affords us an opportunity of giving the following descriptive catalogue of selected varieties, many of them highly popular, and all of them more or less in request among the principal showmen.

Green Edged.

LEE'S COLONEL TAYLOR is a flower of great merit, and much admired, although sadly defective in many properties; the tube is good, the paste is round, but deficient in quality and density, the ground colour dark violet, very circular, but frequently narrow; the green is bright, and the pip is too starry. This flower requires heat to open well; it makes a very handsome plant, and is also a free bloomer, and thrives well.

BOOTH'S FREEDOM has a good tube, the thum is rather close, the paste fine in quality, but not circular; the ground colour very dark, and a rich-looking edge. Freedom is not a free grower, the plant is of a sickly appearance, and very shy trusser, the pips are very apt to fold back when the least exposed to heat.

PAGE'S CHAMPION.—Fine tube and paste, ground colour rather broad, a brownish crimson, the green vivid and fine, pips round and flat; the pip frequently cracks through to the paste. Champion in its best style is worthy of its name. The plant is of small habit, but a fine trusser.

BAILEY'S CLAPTON HERO.—Tube round, but large, fine paste, ground colour crimson, very circular, edge of a very light green, pip round and flat. The Hero must not be exposed to the sun, as its edge is very delicate.

STRETHER'S EMPEROR ALEXANDER.—Tube round, fine dense paste, ground colour dark

brown, edge light green, pip round and flat. This is a very correct flower, but difficult to be got in style for staging, as the edge runs on the least exposure.

HODGE'S BRITANNIA.—Fine tube, well filled with anthers, paste very fine, ground colour very rich violet, rather broad; the edge is frequently of a nondescript colour, neither green nor grey; the pip is very round and flat. This variety has a splendid appearance on a stage, but is not often seen in a show for competition.

SMITH'S WATERLOO.—Tube round, the paste is not fine, although round, ground colour dark brown, and regular, edge of a light green, pips flat, but too starry (or pointed). This variety makes a fine plant, and a good trusser; it has the same fault as *Alexander*, in not keeping well.

DOEMAND'S DON PEDRO.—Fine tube, paste rather angular, ground colour rich violet, too broad, pip round and flat.

OLLIER'S LADY ANN WILBRAHAM.—Good tube and paste, ground colour regular, edge of a fine green, pip rather pointed.

HUDSON'S APOLLO.—Good tube, paste fine, ground colour rich violet, very even in the circle, pip round and flat, although small. This is a new variety, and promises to be a favourite.

DICKSON'S MATILDA.—Tube round, but pale in colour, paste round, and the finest I have seen in an Auricula; ground colour crimson violet, very even and circular, light green edge, pip remarkably round and flat. This is a new variety, and promises, when a little more plentiful, to rank above most of the old favourites.

HEPWORTH'S ROBIN HOOD.—Tube and paste good, ground colour black, rather narrow, edge of a lively green. It makes a small plant, but carries a fine truss; when in its best state, this is a very good flower.

LIGHTBODY'S STAR OF BETHLEHEM.—Tube good but large, ground colour rich violet, and apt to strike through to the edge, green fine, pip large, round, and mossy. This variety has a remarkably handsome appearance in a stage, from its enormous truss and vigorous growth.

DICKSON'S EARL STANHOPE.—Tube fine, rather large, ground colour broad and of a fine rich violet, fine paste, pip very large, but pointed. This is a new variety, also raised by Mr. James Dickson, of Acre Lane, Brixton, near London.

DICKSON'S EARL GREY.—Tube good, rather watery, paste fine, ground colour rich violet, slightly shaded, pip large and flat.

Grey Edged.

SMITH'S BRITANNIA.—Tube good, paste

starry, but fine in quality ; ground colour of a fine violet, well proportioned. This is a remarkably neat flower.

SYKES' COMPLETE.—Tube good; the thrum too much sunk ; ground colour very dark and even, pip round. This variety is very late in blooming, and, from the thickness of its pips, requires a good heat to expand them freely. It is a very distinct and neat flower.

FLETCHER'S NE PLUS ULTRA.—Tube good, paste fine and round, ground colour black, very regular, pip flat, and very large, not so round as could be wished. This flower, when in its best state, is one of the finest in cultivation ; it is very unsteady.

FLETCHER'S MARY ANN.—Tube small, thrum much sunk, ground colour dark brown, pip large and round, but difficult to be got flat.

DICKSON'S PRINCE ALBERT.—Tube very round, paste fine, ground colour of a reddish brown, very circular ; the colour breaks a little towards the paste, which gives it a lighter appearance in some parts. The pip is very round and flat, although a little difficult to open. This is a new and fine variety.

WATERHOUSE'S CONQUEROR OF EUROPE.—Tube round and fine-coloured, paste fine, ground colour dark, very uneven, pips large and flat, a little pointed. This flower, with many florists, is highly esteemed. In my opinion, it is too much be-praised, being a very faulty, coarse flower, unsteady, and seldom you see two pips of the same style, or breadth of ground colour.

CHEETHAM'S LANCASHIRE HERO.—Let out in 1845, under a very high character, and has amply proved itself worthy of its fame. The tube is round, and of a fine colour, paste fine and round, ground of a fine regular black, a little narrow for the size of the pip ; the pip is large, flat, and of great substance. It seems to be a late flower, a little hard to open, and stands long in bloom ; the pips are thrown beautifully out from the stalk. I would recommend this superb variety to those who wish to keep up their favourite place on the prize list. The fault of this flower (barring its price, which is its misfortune,) is an appearance of a crack through the paste, which detracts much from its noble appearance. I believe this variety was raised by a Mr. Brierley, who sold the stock to Mr. Cheetham.

WILLMER'S SQUIRE CHILLMAN.—Tube rather large, ground colour regular, rather broad, of a dark brown ; paste fine, pip round, rather apt to fall back.

OLIVER'S LOVELY ANN.—Good tube, paste very coarse, ground colour light purple, rather narrow, pip large, round, and flat. This variety is frequently shown as a Green Edged.

BEESTON'S FAIR FLORA.—Let out in

1845 ; good tube and paste ; ground colour dark violet, of a very rich appearance. The proportions of this flower are very good, the pip is rather small, and the segments show too much.

KENT'S QUEEN VICTORIA.—Tube round, and well coloured, although quite large enough, ground colour dark brown, pip round and flat. This is a very distinct and pretty variety.

White Edged.

TAYLOR'S FAVOURITE.—Fine tube and paste, ground colour dark, rather broad, pip too starry, and folds back if it gets much heat.

WOOD'S DELIGHT.—Tube rather large, ground of a dark crimson, very regular, pip round and flat, paste rather coarse.

TAYLOR'S INCOMPARABLE.—Fine tube and paste, colour very rich deep purple, rather broad, pip large, round, and flat. A very fine flower.

THORPE'S MAGPIE.—A new flower ; tube too large and very watery, indeed about the worst an Auricle could have ; paste fine, ground colour dark, a little pouncey (or tinged with farina) ; pip round, very uneven, (or wavy.) This flower has been much praised : in my opinion, it is about the worst of its class : it is very like Hughes's Pillar of Beauty, and quite inferior to it. However, florists may judge for themselves, as I write my own opinion, without fear or prejudice.

ASHTON'S BONNY LASS.—Fine tube and paste, ground of a dark crimson, pip round and flat. This is a very handsome variety.

LEE'S BRIGHT VENUS.—Fine paste, tube too large, and frequently comes distorted (or monstrous), ground dark crimson, nearly black, with a fine dense edge, makes a large plant, and strong trusser. This is an old variety, and still a favourite.

WILD'S BRIGHT PHŒBUS has a good tube, quite large enough, ground colour is very dark, but much too broad for the edge ; unlike most of the White Edged, there is no farina on the plant.

KENYON'S LORD CHANCELLOR.—Tube round and large, ground dark and broad, pip round and flat ; upon the slightest exposure to the sun the ground colour bleaches out.

POPPELWELL'S CONQUEROR.—Round tube, rather large, colour a brownish red, pip round and flat. This is a very indistinct looking flower, as the ground colour is not dense enough.

HUGHES'S PILLAR OF BEAUTY.—Tube round and watery, paste fine, colour black, pip round, and very wavy, or crimped.

LEE'S EARL GROSVENOR.—Fine tube and paste, colour black and regular, pip large, round, and flat. This is a late variety, very splendid, both as a plant, for habit, size of

truss, and beauty. I consider it one of the best grown, if not the best, of its class.

LIGHTBODY'S FAIR FLORA.—A new flower, very fine tube and paste, the ground colour rich, although a little feathery, the pip very flat. This is a very pleasing variety.

LIGHTBODY'S FAIR MAID.—Very fine tube and paste, ground colour rich dark crimson, sometimes a little pouncey, pip large, rather late, and hard to open.

ASHWORTH'S REGULAR.—Worthy of its name, as it is a very neat flower; the pip is round and flat, but small.

CAMPBELL'S ROBERT BURNS.—Fine tube and paste, colour rich crimson, very regular, pip round and flat. This is a late flower, and very fine and distinct.

TAYLOR'S GLORY has a good tube, paste fine but not circular, ground colour crimson, breaks through the edge, the pip stiff and round. This is a favourite flower; in my opinion it is much overrated.

Selfs.

SMITH'S MRS. SMITH.—Fine tube and dense paste; however, scarcely circular; colour of a very rich plum, pips large, round, and flat, one of the finest *Selfs* grown, makes a splendid plant, and large truss.

NETHERWOOD'S OTHELLO.—Fine tube and circular paste, colour very rich dark brownish crimson. This variety should be bloomed in the shade, as the pips have a tendency to fold back. It makes a very handsome plant, and large truss.

BERRY'S LORD LEE should be classed as an Alpine; the colour of a bright red; makes a very small plant. This variety is very early, and a free bloomer.

MARTIN'S MISS MARTIN.—This is a very pretty variety, of a light blue colour, a little shaded.

MARTIN'S MAYFIELD is of the same style as the above, the colour has a tint of pink in it.

MARTIN'S ECLIPSE is a fine dark *Self* of good habit, and large truss. This variety requires time to open well, the pips being cupped.

KAYE'S JUPITER has a fine tube, and dense fine paste, the colour of a rich dark plum, the pips round and flat. The stem of this variety is too short, scarcely showing the truss above the foliage, which gives it a stunted appearance, and detracts much from its beauty.

GORTON'S STADTHOLDER.—A yellow *Self*. It forms a pleasing contrast in a stage. The paste is too narrow, although round.

BERRY'S LORD PRIMATE.—A beautiful dark *Self* of a maroon colour, very perfect and neat; its only fault is the small size of the pips.

BARKER'S NONSUCH.—A very fine flower of a dark plum colour, with a slight shade;

pips circular and flat; makes a handsome plant.

BRADSHAW'S LISTY.—A dark blue, makes a small plant, the stem too short.

REDMAN'S METROPOLITAN.—A dark blue *Self*. I think this variety and Gleg's *Apollo* the same.

WHITTAKER'S TRUE BLUE, as its name implies, is of a fine blue colour. The plant is of small habit, and the pips are hard to open, as they are apt to come what florists term cupped.

JUNIOR.



PIMELIA INTERMEDIA.

THE INTERMEDIATE PIMELIA.

THIS is one of a very pretty family of greenhouse shrubs, almost all of which are, more or less, favourites among cultivators.

Pimelia intermedia is a slender growing plant, with small twiggy branches, lance-shaped leaves, and heads of small white flowers terminating the little branches. It is, as all the other species are, of evergreen habit, and produces its flowers during the months of May and June. It is a native of King George's Sound, and was introduced in 1825.

The *Pimelia* is a plant requiring rather careful treatment to grow it to that perfection in which many of them are produced at the metropolitan exhibitions. The chief points of attention are the following:—To place it in a light and well ventilated greenhouse in winter and spring, and in a cool pit during summer, where it will make its growth after it

has done flowering ; in the latter situation it should have as free a circulation of air as can be given to it, and during the hottest part of the day should be shaded from the sun, while at night, if the weather is mild and not likely to be stormy, and during the cooler parts of the day, they should be entirely removed:—To give it a rough open compost, of three parts turfy peat, and one part turfy loam, with sand and lumps of charcoal intermixed, and abundant and perfect drainage:—To pay especial attention to watering ; not to allow the soil ever to get thoroughly, or even very nearly, dry ; but as carefully to avoid making it soddened with wet at any time : this will depend upon the drainage ; if that is good, the superfluous water will all pass off readily, and there will be no fear of its getting stagnant ; but if that is imperfect, or becomes so from any cause, it must be renewed and made efficient. In potting, liberal shifts should be given, for it is injurious to cramp the roots within small pots, or to transfer them to others scarcely larger : while small, the pots into which they are shifted should afford space for at least an inch all round of fresh soil ; and when they get larger and stronger, two inches is better ; but they must then get abundance of light and air, and must be carefully watered. In the process of potting, set the base of the plant about level with the rim, and let the soil slope a little, so as to be below the rim where it meets the edge ; press it firmly down, but do not ram it in, or make it hard ; it should be just as firm as moderate pressure will make it. In the autumn the plants will take their position in the green-house, and during the winter require to be very carefully watered, for there is then equal danger of both extremes, as in the summer ;—there is risk of letting them get too dry from fear of giving them too much, by which means the interior often gets as dry as dust while the top perhaps looks wet ; and there is risk of giving them too much, for evaporation goes on slowly then, and unless the actual state of the soil, as regards moisture, is looked to, it will be no difficult thing to overwater them. Either of these errors will bring the plants into a sickly state.

P. spectabilis is the newest of this family, and is now much grown for exhibition ; it bears large heads—four or five times as large as those indicated in the accompanying engraving—of delicate flesh-coloured flowers, and is rather a strong grower. *P. hispida* is a beautiful kind, not so robust as the last, but when well grown bearing heads of pink flowers nearly as large as those it bears. *P. Hendersonii* is a much deeper coloured one, the colour being a deep bright rose, and the heads of flowers are smaller. The old *P. decussata* is a very dense, bushy-growing plant, and has deep

pink flowers. *P. ineana* is a very distinct kind ; it has whitish, or hoary-looking stems, and small roundish leaves, dark green above and hoary beneath, owing to the presence of short close wool ; the flowers are white, with red stamens. These are all handsome and distinct kinds, and every one of them worth cultivating.

THE RAMPION.

THE Rampion (*Campanula Rapunculus* of Linnæus) is a wild British plant, found growing about the borders of fields, and on banks. It was formerly much cultivated, but is not now much attended to, no doubt in consequence of the number of superior salads now grown. It is a biennial plant, and as the young roots and leaves are the parts used as salads, it is necessary to raise fresh crops every year. When it flowers it generally attains the height of about two feet, producing a spike of ornamental blue flowers. The long spindle-shaped root is the part chiefly used, being eaten raw, and it is of a very pleasant nutty flavour. The leaves as well as the roots are sometimes cut up in winter salads, to which they make a pleasing addition.

In order to obtain the roots in perfection, a shady piece of ground should be chosen, as a north border, for instance, and dug or trenched, being well manured, if not in good order ; and then the surface should be made rather firm, and the seeds sown upon it in drills about eight inches apart. The seeds being very light and small, little or no soil should be raked over them, in order that they may not be buried too deep to vegetate. This should be done about the latter end of May, as, if the seed is sown earlier the plants are very liable to flower during the first season, and thus the crop would be lost. When the plants are sufficiently advanced, they should be thinned out to about four inches apart in the row, and the ground must be kept clear of weeds, and be stirred deeply, care being taken that the roots do not get injured. Attention must be paid to watering, which should be done with a fine rose pot directly the seed is sown, and the bed should never be allowed to get quite dry, as the size and succulency of the roots depend materially on this point. If these directions are followed, and the ground be not too hard or strong, so as to induce the roots to fork or branch out in large fangs, a fine crop may be expected in November, which will keep fit for use until April, when they will begin to flower, and when a few may be left for seed, and the rest be cleared away. They should be taken up as wanted, as they retain their qualities much better than if taken up in autumn and stored away.

The *German Rampion* is the common evening primrose of our gardens, (*Oenothera biennis* of Linnæus,) a native of North America, but now naturalized in various parts of England, especially near Liverpool. As a flower-garden plant it is remarkable for the rapidity with which it unfolds its blossoms in the evening, as well as for the agreeable fragrance exhaled at the same time. In Germany the roots have been long brought to market, and are eaten raw, being said to be an incentive to wine-drinking. Used this way, however, they are inferior to the true Rampion, as they have a rather disagreeable pungency in the mouth. In the winter the roots are dressed in the same way as scorzonera or skirret. Its treatment should be exactly the same as that recommended above for the Rampion, only sowing much wider, and thinning the plants out to greater distances. If the crop fail, both these plants may be transplanted when young, but they seldom make roots half the size of those which are not disturbed. When well grown the roots ought to be about a foot long. They are covered with a thick outer coat or rind, which must be removed before they are eaten in a raw state.

THE ARTICHOKE.

THE Artichoke (*Cynara Scolymus*) is a native of the south of Europe, and appears to have been introduced by or before 1550. It is a very strong-growing perennial plant, with whitish pinnatifid leaves, attaining a length of five feet. The flower-stems rise to a height of six feet, bearing several large heads, which produce purple flowers in August. The fleshy receptacle of these flowers, called the *bottom*, is the part used, being cooked in many different ways, and occasionally on the continent used raw as a salad.

The varieties are not numerous, being limited to the three following in British gardens:—

The *Green, Oval, or French Artichoke*. This variety has the flower-head of an oval or conical shape, with rather narrow scales, which are nearly straight, much sharper pointed than in the next, standing rather outwards, and are of a pale mealy green colour. This is very generally cultivated, being considered to possess a superior flavour to the others.

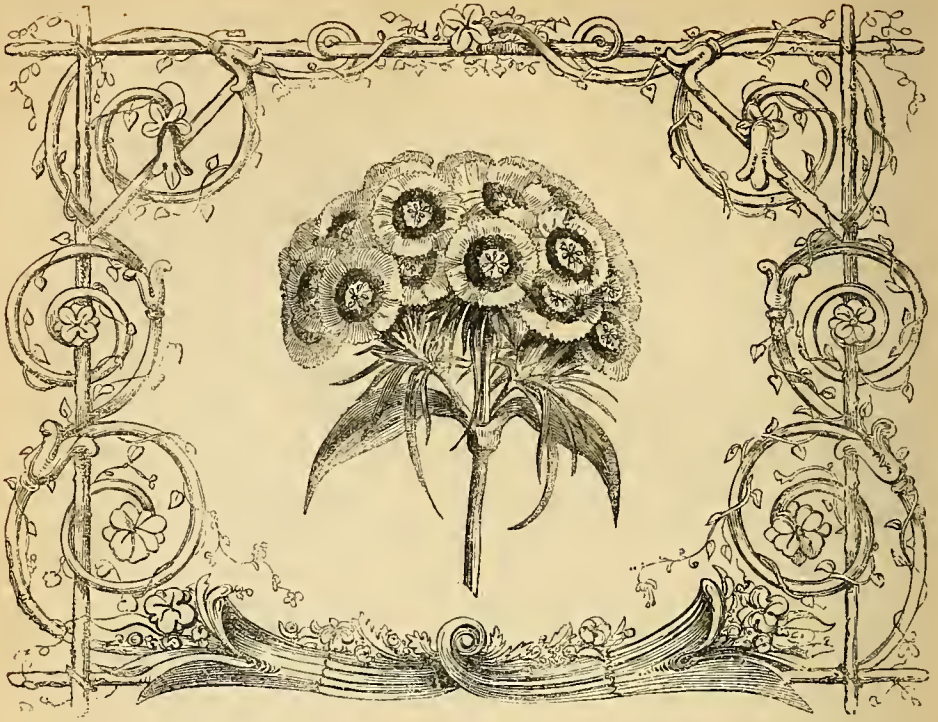
The *Globe, or Purple-headed Artichoke*, has the scales of the flower-head broad, blunt, and incurved at the points, giving the head a compact, squat, globular shape; the scales are also tinged of a dull purplish colour. This variety produces the largest and most succulent bottoms, and is much grown.

The *Dwarf Globe Artichoke* appears to be a variety of the last, and is a useful sort for a

small garden, as it is prolific, and occupies far less room than either of the others.

The Artichoke requires a deep, free soil, in order to attain its full development, the roots being thick, fleshy, and penetrating deep into the ground. In cultivation, it should also be liberally supplied with manure, in order to render it as succulent as possible. It is generally propagated by suckers from the old plants, seed not being often perfected in this country, or, at least, not often being allowed so to do. Having fixed on a spot for a plantation of Artichokes, let it be well trenched, three feet deep if possible, and manured. Then mark it out in rows, six feet apart, or more if the ground be very good, and plant strong suckers about three feet apart in the rows. The suckers should be carefully slipped off the old plants, and trimmed neatly. The plantation should be made about the beginning of April, and care should be taken that the suckers do not suffer for want of water. Keep the ground clear of weeds, and well stirred about the plants, observing the same rule with any crops which may be on the intermediate ground, but which ought not on any account to interfere with the Artichokes. The strongest will produce a few heads fit for use the same autumn, which will be found acceptable as coming in after the older plants are done. Dig and manure among the plants during winter, depriving them of any suckers then formed, and follow the same routine as long as the crop is intended to stand. Where a great supply is wanted, it is a good plan to make a new plantation every year, as by this means the season may be lengthened out almost to Christmas, by cutting the latest heads with long stalks, and keeping them in sand in the root-room. After five or six years' growth, the plants begin to produce but indifferent heads, and the plantations are seldom worth keeping after that period, so that provision should be made for renewing them at least once or twice during that time. When the old plants are to be destroyed, some blanch the leaf-stalks, and use them in the same way as cardoons, to which some prefer them. For this purpose, as soon as the crop of heads is gathered, the plants are cut over about six inches from the ground; as soon as the fresh leaves are near two feet high, they are bound up with bay-bands, and earthed up; in about five or six weeks the stalks will be found perfectly blanched, and fit for use. When gathered, the old plants may be destroyed.

It is usual to earth up the plants in the autumn, to preserve them from frost, and in very severe winters, this is desirable. The blue plants possess the property of curdling milk.



GLENNY ON THE SWEETWILLIAM.

This old favourite of the borders has been recently cultivated with some regard to those properties which constitute the beauty of florists' flowers, and enough has already been done to encourage us to attempt more. Our readers are aware that the Sweetwilliam throws up its flowers on close heads at the end of jointed stems, which have leaves at each joint, and that these heads of bloom are composed of flowers somewhat circular, fringed or notched at the edges, variously marked with circles, or circular shades, and whether dark or light, plain or variegated, singularly speckled all over the surface. The blooms are too close together in most of the sorts to lay well; they crowd each other when in full flower, and the footstalks are too short to let them expand into fine heads. As now grown—and indeed as always grown, for very little attention has been paid, on account of its requiring no culture, and having therefore always been among the most common of the border flowers—the greatest objections are the notched or fringed edges; the quantity and smallness of the crowded flowers; the speckled surface and flimsy texture, and short footstalks; but, as a border flower, its showy nature and easy culture will always secure it a place, and has hitherto prevented

any one from caring about its improvement. Some, however, have been produced with a perfectly smooth edge, as smooth as the edge of a phlox, and our hopes of improvement from these are sanguine; but those who have them, should propagate in the same way as pinks are propagated, so as at least to perpetuate that improvement. In a quantity of the deep crimson kind, exhibited during the present season, at the Horticultural Agency-office in the Strand, there were a number of them which had completely lost their serrated or fringed edges, and we regretted many times to see such constantly mixed with twice the number that had not lost those faults. They were shown, too, for the purpose of selling the seed, so that whoever buys the packets of seed may calculate upon obtaining a rose-leaved, or rather smooth-edged, among their lot, whereas had they been separated at first, by throwing away all but the best, the seed would have produced two-thirds, perhaps, instead of a tenth or twentieth part of the improved kinds, and some still further improved perhaps from those the seed was saved from. This seed was raised at Tottenham, and is the only seed we know of saved from flowers of which at least a portion were greatly improved in those particulars we have men-

tioned; but even the best of them were small. The grower says they were only the lateral flowers, and therefore that the plants had much larger ones on the principal shoots. This, however, like all other stories of small things, cannot be depended on. All we can ever believe of florists is, that which we see with our own eyes, and not always that, for flowers are capable of being altered in appearance, and frequently are so, although in the two particulars we mention, the smoothness of edge and the colour of the bloom, there can have been nothing artificial. All we regret is, that the sower of the seed had not discernment enough to pull up and throw away every one with a serrated edge. However such as they were, the information we had was on a label exhibited with the flowers, that the seed might be had at one shilling per packet, and that plants, if preferred, might be purchased for planting out, at five shillings per hundred. Beginning, then, with say one pound's worth of these plants, and getting them put out in good strong soil well dressed, a foot apart every way, there may be some chance of ten or a dozen with smooth edges; but as any others showed their flowers to be notched or fringed, they should be pulled up and thrown away. If the procuring of these plants is left till the autumn, we are informed the price will be doubled, so that it would be as well to procure them directly. Get a place dug and dressed with some well-rotted dung, neatly levelled, and the plants disposed at distances of one foot from row to row, and six inches in the row. They must be watered in, to settle the earth about their roots, and if the weather prove fine and warm they may require frequent watering for three or four weeks. They must be regularly weeded and kept clean, and when hoed, a little of the earth should be drawn up to the stems. In this place they may remain till they begin to flower, when they must be examined daily, and the instant any one opens with no improvement in it, throw it away, or cut off the flower stems, that it may not make the next year's seed the worse. Those which prove to be smooth-edged, or which exhibit any marked improvement, should remain in the bed to seed from, and all the young increase in the plant, that is to say, all the shoots that have not flower stems, should be cut off and struck like pinks, or if long enough, layered like carnations and picotees; because it is of the utmost importance to seed from those which have improved, and by propagating these, to keep a large proportion of them among the seedlings, that any that have sufficient novelty to offer a temptation to seed from them, may be impregnated with those which are evidently advancing towards the

standard. It may be that the remarkable size, or colour, or habit of one, in other respects not good, may render it worth seeding from, and in this case the more it were surrounded by the smooth-edged ones the better.

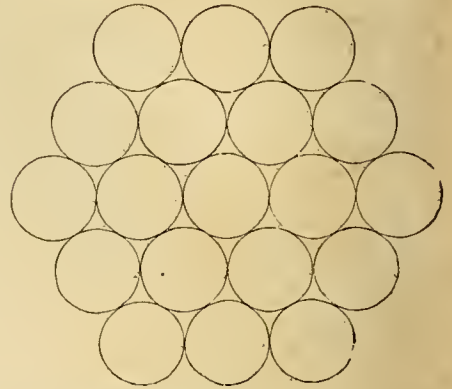
Before any of these new varieties will be worth naming they must attain the two qualities of size and smoothness of edge; all that we have seen yet have been rather diminutive than otherwise; as small indeed as the ordinary flowers would be with the fringe cut off. It will, however, be worth while to cut out two-thirds of the pips from those principal heads that we mean to seed from. Every thing that tends to increase the size of the flowers should be resorted to: the planting in rich ground and in an open space; reducing the heads of the plant to one, by cutting off all the rising stems as soon as they spring up; and the reducing of the pips or buds on the single head to about as many as will touch one another, and no more. These are means used with the other members of the *Dianthus* family, such as pinks, carnations, and picotees, and with the best possible effect. Another means of advancing their size, is to pick out from the entire collection a few of the largest, almost without reference to other properties, except desirable colours, if they can be found, because it is certain that but little can be done with them as show flowers unless the size can be considerably increased. We should plant out some of the best of the smooth-edged kinds by themselves to be treated for seed; and when the main body of seedlings bloomed, cut off the heads of such as had remarkable colours, or were very large, or exhibited any rare quality, as soon as they were fully in flower, and taking the head in the hand to where the smooth-edged ones were, turn it face downwards on the flowers of a smooth-edged one, tap gently three or four times, or more, so as to shake out the dust or pollen from the cut one on the flowers of the other, tying bas round the head so impregnated to mark it, that it might not be done twice over: of course the more plentifully the dust is supplied, the more certain will be the results. By carefully looking over all the stock, sufficient heads may be cut to impregnate all the smooth-edged ones, and thus prepare seed from which there will be every chance of procuring desirable varieties. These great improvements, however, are not produced in the early attempts; all we can hope for is novelty and a trifling advance each season. At the same time, however, that we impregnate the smooth-edged kinds with others that are remarkable for size or colour, we should cut some of the heads of the smooth-edged varieties grown for the purpose, and with them impregnate some of the heads of others which are promising, though not, per-

haps, smooth-edged; these ought to be marked by tying a piece of bas matting round such heads as are so impregnated. But there is a class of double-flowers of the Sweetwilliam, and these are susceptible of improvement in the same degree as the single; that is, by increasing the size, getting rid of the fringed edges and the speckled surface, and obtaining bright colours. And as the double ones can be propagated in the same way, and yield seed in the same abundance, there is the same opportunity and encouragement. There is one character in the marking of the Sweetwilliam that renders it inviting as a show flower. It comes in various circles of colour, and an individual pip is often as strongly marked as an auricle. In the double ones it sometimes shows an eye like the pink; but regard should be had to the novelty of colour, and mixture or contrast of colour, at the same time that we recognise improvement of edge and the thickening of the petal. The same proceeding as regards seeding from the best, and crossing with the best, as has been recommended for single ones, should be observed with the double ones; and no pains should be spared to propagate such as give any evidence of an advance. The seed being saved from the best, and being carefully gathered before it begins to shed about, the sowing may be deferred till the spring. About the latter end of April or the beginning of May, the seed may be sown thinly in a bed of tolerably rich mould, and be raked in evenly, and there left to come up; but if a very dry period occurred after sowing, it would be necessary to give water, because, although plenty may come up, many of the seeds would perish, and those which were destroyed would be just as likely to be good as those which come up, and perhaps more so, because the higher the breed of any thing the more delicate it becomes. When the seeds are up they must be kept clear of weeds, and be watered in very dry weather, but only in very dry weather. As soon as they have attained sufficient size to be planted, set them out as directed for small plants, raising the roots without breaking them, and watering them after planting to settle the earth about them: here they remain till they bloom, and you reject the bad as fast as they open their flowers, which will be in the months of June and July in the following year.

PROPERTIES OF THE SWEETWILLIAM.

With regard to the properties of a Sweetwilliam, the head of bloom should be large; the individual flowers should be round, smooth on the edge, flat on the surface, thick in the petal, and the edges should touch each other without lapping over; the colour should be pure, free from speckles—if marked, the circles

should be well defined; the divisions in the petals should not show, and the footstalks of the individual flowers should be long enough to throw them up above the green of the plant itself; there should not be less than nineteen pips or flowers in the truss, and disposed as under.



The Sweetwilliam is very apt to throw up a stem from every shoot, so that there is a difficulty occasionally in procuring shoots to strike; however, the richer the ground in which they are grown, and the more open and airy the situation, the more likely are the plants to make bottom growth; and if it be necessary, the entire bloom must be sacrificed of some plants, to encourage the increase of grass or shoots at the base. The layering of the Sweetwilliam is often difficult, from the shortness of the shoots; but if they are merely stripped off at the bottom, they will strike in the shade under a glass. The rooting may be done on the old plant, by merely pegging down the shoots, and earthing them so as to cover the stalks; and again, by earthing up the plants in the rows, so as to reach half up the stems of the shoots, you will frequently cause every side shoot to be well rooted, and they will only require to be detached from the old plants, and put out the same distances as seedlings.

We have been questioned by some whether the attempt to convert this tribe into show flowers ought not to be by crossing with the pink, and so raising a family of mules. We deny altogether the propriety of giving up the Sweetwilliam as a show flower in behalf of the mule pink. The Sweetwilliam is of a very distinct and showy character; the noble trusses are a feature which cannot be spared; while nothing could be done with a mule, but to look at the single pip, for it is not in the nature of a pink to throw a truss of flower.

FIELD GARDENING

FOR THE

ENGLISH LABOURER.



HERE can be no subject invested with a deeper interest than that of the English labourer.

This position will hold good, even when we find him smiling by his hearth in the enjoyment of all those comforts, which in the best of times follow the labours of the industrious. But when, as at present, his condition is surrounded with so many circumstances which claim our sympathy and consideration—when we find him ill-requited for his work, ill-fed, uneasy, and, in some instances, desponding—the interest attached to his condition becomes of primary and pressing importance. If he have wrongs which no one is careful to repair: if his rights are not dispensed as a duty; or, in other terms, if he have no means of subsistence but that derived from the mere will or generosity of patrons; then it is not difficult to foresee that, in place of the virtues usually fostered by the enjoyment of such rights, we shall find him in possession of all those vices which are the offspring of want, and destructive of social order. The labourer's private happiness has been wisely valued as equivalent to public prosperity; and it is well to look to his privations and sufferings as involving a risk at all times too great to be prolonged.

It is well known, that the agricultural labourers of this country have not the same interest in the soil as they once had. Every village and district of country readily affords examples of patches of land having been consolidated with a larger tract belonging to some wealthy person in the neighbourhood. A constant dissevering of the land from the limited holders, has thus been going on for several centuries, until we scarcely find a poor man with his croft of ground whereon to pasture his cow, &c. Though a necessary consequence of the improved state of agriculture, the decay of the cottar tenantry, as will be seen in the sequel of this article, is an evil which has been always insufficiently appreciated: for though it is not meant to recommend the re-introduction of small holdings of ten or twenty acres, I trust I shall be enabled to show that it is consistent with sound policy, to let every English labourer have some certain provision, uninfluenced by the fluctuations of the labour market, to which he might resort in time of need. My recommendation therefore is, that however small, he should have his share of the land. History speaks loudly and distinctly on this point, and traces the melancholy fate of the most powerful empires and states to the cutting off of every particle of the soil from those which were so closely attached to it. "When the law of the Ephori empowered the Spartans to sell their landed property, and dispose of it by will; and when the estates which had been distributed by Lyeurgus among 9,000 citizens were possessed by less than 100 individuals; Sparta had no longer any soldiers, army, or power. When Athens contained within her walls individuals possessed of three miles of land, while others had not wherewith to get buried, Demosthenes in vain proposed to raise an army of 2,000 foot, and 5,000 horse; a third only of which was to consist of citizens; no one was found ready to defend a country which had become the property of a few families." *

I am very much misunderstood if I am supposed to advocate any system favourable to the equality of possessions, if, indeed, such a system could be seriously entertained by any one. The inequality of individual disposition and faculties, must ever thwart the idea of

* *Gaull's Political Economy.*

an uniform distribution of wealth ; and the absurd doctrine may be at once dismissed : what I mean is, that it is well if possible to admit all into the benefits of the social compact ; for the man who rents a perch of land is invariably found to be a more submissive subject than he who is without any. He is more disposed to obey the laws of his country, and more energetic in spreading a love for those laws, just because he knows that to them he is indebted for the preservation of his little property. So true is this, that a statistical statement indicating the safety and influence of any government might be accurately framed from the state of the poor with reference to their holdings in the soil. Chartism springs not up among the occupiers of the ground : it has not even one member from that class. Those who watch narrowly the calendars of our assizes fail to discover a rick-burner to have been at the time of his conviction a grower of corn for himself, even if it were only to the extent of a sheaf. It is pretty evident, then, that in urging any system for investing the labouring man with a handful of the soil, the plan morally and politically is free from objection. This surely is a great point to gain. To start him in a course which the government of the country, and all those who are interested in the cause of morality, may equally applaud, might be taken at once as a substantial proof of its goodness ; but this is not enough : let us see practically and minutely if the plan proposed has a really beneficial influence on the labourer himself,—whether in short it supplies him with the means of setting misfortune at defiance, and allays all the harassing fears which poverty too often brings in its train.

Fortunately, all labourers are not in a distressed condition ; and it is from this fact that I shall have occasion to borrow the groundwork of the following remarks. We find some who hold out through every vicissitude and are happy, having enough of the necessities of life ; but of course such persons *have the means* of warding off the wretchedness which has befallen so many of their fellow-workmen ; it will be the object of these remarks to point out what those means are, and how they are to be placed within the reach of all.

It follows, that I have no speculations or theories to offer. I shall advert to facts only which I have tested by their every-day results in raising men from penury and want, to a degree of comfort suited to the station of those whose condition is under review. It will be permitted me to state, that I have no faith in the “various ways” by which some propose to better the condition of our labouring classes. A *variety* of measures is, in my opinion, quite incompatible with the capacities of an agricultural labourer, whose powers are altogether

centered in the soil, and in sowing and reaping its products. Out of this element, he is timid and helpless ; but in it, all his powers seem to be gratified. To give him bread is the desired object ; and how can this be more reasonably done than by a *direct* appeal to the soil whence it comes ? It is in this way, it will be answered, that he already derives his livelihood, but in reality it is not so. In this respect he is on an equality with the manufacturing workman. The sheaves which he binds up in autumn are not his, nor has he at present any right to a share of them, however small : his wages are in money, often bearing little proportion to the demands upon him for his daily food, and that of his family, for clothing, fuel, house-rent, and other unavoidable expenses ; and very little to what he might have were he allowed to be, on his own account, a cultivator of the fruits of the earth.

Though every one will admit that the agricultural labourer, generally considered, is at the present time in an unfortunate position, it may be of use to take a rapid glance of his condition in past times ; for by tracing the change which he has undergone, we shall the more readily discover the advantages which he has been deprived of, or, in other words, we shall be enabled the more clearly to describe his lost patrimony, and to urge its being returned to its rightful owner. Altogether, the subject is of the deepest importance, and seldom indeed have the offices of humanity been exercised on a theme more sacred or interesting.

All records affecting the condition of the agricultural labourer, previous to the time of William the Conqueror, may be safely laid aside as unauthenticated, and useless for the present purpose. The Bible indeed forms a grand exception ; but the light which it throws on agricultural manners, is chiefly confined to the pastoral department. It contains, however, some wholesome lessons in connexion with this subject, well worthy of our turning aside for a moment to note, and which, if pondered in a right spirit, may be the means of abating that disgust, so often expressed by large holders of land at the minute cultivators of a perch or two, who in their peaceful and unobtrusive callings are slightly represented as “aping the farmer !” Let such remember that the family of Laban *personally* tended his flocks and herds on the banks of the Euphrates, and freely and willingly engaged in the simple arts of agriculture known in his time. It appears, too, that the descendants of Abraham followed the same kind of employ in the fertile lands of Canaan. The sons and daughters of princes took a direct interest in the management of flocks and herds, and in cultivating the

soil. Rebecca, who was the only daughter of a shepherd prince, was wont to go to a considerable distance to fetch water for her father's flocks and herds; and it is evident from the address and readiness with which she let down her pitcher from her shoulder and gave drink to Abraham's servant, and afterwards drew for all his camels, that she had been accustomed to that employment. Jacob, though the son of a shepherd prince, kept the flocks of his maternal uncle; and his own sons followed the same occupation both in Mesopotamia and in the land of Canaan. Both Homer and Virgil have described the labours of the field as most honourable, and some of their greatest heroes are represented as periodically engaging in the work of tilling the land. The bulwark, then, which modern artificialism attempts to rear between the labourer and his employer, is in reality as flimsy as it ought to be. But to return more immediately to the subject.

For a considerable time after the Conquest, the working population of England was divided into two classes; the larger class being agricultural, depressed it is true by severe servitude, yet permitted in some instances to rent small farms sufficient to support themselves and families, or to have the benefit of a cottage with a small allotment of land from the common on which they might feed their cows and sheep, and provide poultry, eggs, &c., for the use of the baronial proprietor's table. The other class consisted of slaves or thralls, principally employed in domestic offices, fed by the lords, and regularly disposed of as articles of merchandise. History is almost silent as to what domestic comforts were enjoyed by this class of people; and from the fact of there having been no legislative provision for them, it has been thought by some that, though poor, they were in the enjoyment of the necessities of life. In all probability, fish, bread, and beer, formed the staple commodity of their diet; butcher-meat being reckoned a luxury indulged in only on special occasions of rejoicing, such as harvest-home, &c. At any rate, it appears that during the reign of Edward I. the condition of the poor people became so far ameliorated as to enable a great proportion of them to hold a tenure in lands, a privilege which hitherto formed the exception rather than the rule. Even this privilege was so far restricted as to involve the services of the poor at certain seasons of the year in sowing and reaping the lord's corn, felling and earthing timber, and prosecuting improvements around the mansion. During those seasons, the labourers were fed by the landowner in whose work they were engaged; and in many respects their situation resembled that of the cottar population,

a few years since, in the counties of Ross, Inverness, and Sutherland, in Scotland. Their houses were built of turf, or mud, without chimneys, and the chief articles of furniture consisted of a brass or iron pot, a chair, table, and bed. Aided by the impulse of commerce and the humanizing tendency of Christianity, the reigns of Edward III. and Richard II. were distinguished by a loosening of the grasp of feudal masters, so that the labouring classes might at this period be considered as fast emerging from a state of compulsory servitude. The progress of manufactures at this time, had also the salutary effect of changing the manner of living indulged in by the chief landowners. Riotous and extravagant hospitality ceased in a great measure: the number of useless retainers, which went to keep up a sort of barbaric splendour, was curtailed: and the funds which they absorbed were spent in purchasing the productions of art. The barons vied with each other in furnishing their houses: cities became their residences, and they were thus exposed to multifarious expenses which were formerly kept within their own demesnes. As might naturally be expected, the consequences were two-fold—a greater freedom bestowed on the cottar politically considered, and a more certain course pursued by him in cultivating his land. But though productive of good in the respects alluded to, the manufactures of this early period led to similar results as have been witnessed during the last quarter of a century on the Sutherland estates in the northern districts of Scotland. Spots of land which had hitherto smiled under the minute care of the labouring man, were obliterated: the little seats of husbandry, with all their interesting associations, were broken up, and presided over in one continuous tract by the shepherd or herdsman. Such was the consequence of a demand for wool to supply the new manufactures. The extent to which this process prevailed was just as far as the lords of the soil had the power to carry it, which in most cases extended over the demesne around the mansion. Beyond this point, there were a numerous body of tenantry whose right of occupation was indefeasible, and to them a certain number of the outcasts applied for relief, and were so far successful as to be permitted to build a house and occupy a fragment of land on their small holdings. Some resorted to manufactures, whilst the remainder were left to form the germs of pauperism in this country, which, though formally provided for only in Elizabeth's time, was in existence for centuries before.

A general impression exists that the condition of the labouring poor was aggravated by the dissolution of the monastic institutions of

this country, by their thereby losing the hospitality of those establishments; but there is every reason to believe that the charitable doles thus distributed were only enjoyed by those immediately belonging to their own demesnes. Sir F. Eden gives it as his opinion, that the abbeyes distributed of their substance amongst the rich rather than the poor; and there is, at any rate, little risk in waiving for the present any claims which those wealthy bodies might have had in relieving the masses of needy labourers. The system, moreover, was more apt to foster a habit of indolence and contentment, rather than excite the laudable spirit which should ever be set before the peasantry of a country—a reasonable hope of independence through industry and foresight. From this view of the case, therefore, the Reformation may be fairly exonerated from producing anything like that degree of misery amongst the poor which is generally attributed to it.

Of the effects which the important act of Elizabeth had upon the agricultural population, it is not necessary that I should directly speak. Under the administration of this act, up to the year 1709, or about that time, our rural population appear to have been enjoying all the immunities which they had temporarily lost during the fourteenth century; and indeed it may be safely asserted that their extended and uninterrupted privileges during this period indicate one of the happiest eras in their history. From this time, however, must be dated a series of the most disastrous changes in their condition, arising from the inclosing and consolidating of lands which had become the joint inheritance of the poor. The evil, in my opinion, did not necessarily proceed from the inclosure acts which were granted at the period alluded to; for my firm conviction is, that had the lands apportioned in lieu of those taken from the poor, been protected from subsequent alienation, the rural population of our country would have been, at this moment, in a much better position than we now find them occupying. Of the various other ways in which our agricultural peasantry have lost their small allotments, any history of an English parish will afford an ample illustration. Such a history I have not the means of consulting at the present moment, but, from other available sources, I select, almost at random, as follows:—"Sir Thomas Franshaw, knight, left by indenture bearing date 26th July, 1662, one-fifth part of the rents and profits of an estate, for the poor of Barking in Essex, payable on the 20th of December, yearly, by the owner of a farm called Jenkins. Sir Charles Hulse, who is the lord of the manor, and the present owner of a farm in the parish called Jenkins, does not interfere in the

distribution of the charity; and the one-fifth part of the surplus rent which should be yearly bestowed on objects selected by him is not therefore so applied."* "It appears, from a brass tablet in the parish church of Netteswell, that Thomas Lawrence, who was buried there in 1522, gave 5s. a year for ever to the poor, payable out of lands. Nothing is now known of this donation."† "Fifty-six acres one rood and thirty-nine perches of land was left by Thomas Edward Freeman, Esq. of Batsford, Gloucester, for the poor parishioners of Great Tew. This land was afterwards exchanged for seventy-five acres and thirty-six perches, by which the persons concerned in the transfer were supposed to have gained 1,200*l.*, and the trustees have not accounted for the above charity for twenty-eight years."‡ "A person who had lands in an adjoining parish died in the century before the last, as is supposed, and left lands charged with an annual payment of 2*l.* to three different parishes, of which Great Waldingfield was one, to be distributed amongst the poor; which sum has been regularly received by the churchwardens till within the last three or four years, from the person supposed to be in possession of the estates; but he being dead, and the property divided among his three children, none of them will pay the charity, each denying that the lands so charged are in his possession."§ "An estate of about 70*l.* per annum was left for the use of the poor of Spratton, in Northamptonshire, but from which they derive no benefit, as it is not expressly stated which way the poor are to enjoy it, and the farmers apply the whole to help the levies."|| With regard to the alienation of lands belonging in common to the poor throughout the villages of England, I may instance two cases which I have ascertained from personal inquiry to be correct. The first is Snettisham, in the county of Norfolk. The commons of this parish were enclosed under an act passed in 1761, when about forty cottagers were found entitled to allotments of three acres each in lieu of their rights. In the course of time those allotments were gradually given up to neighbouring proprietors, who were anxiously waiting for every opportunity that might occur to take lawful possession of them by purchase, so that in 1804 only ten cottagers remained in the parish occupying land; and at the date at

* Report of Commissioners for Inquiring concerning Charities, part i. p. 118.

† Ibid. p. 199.

‡ Samuel Nash, Vicar, in Report on Education of the Poor, (1818) vol. ii. p. 731.

§ Francis Cresswell and Thomas Wallace, Ministers, Waldingfield, Suffolk, in Report, &c. p. 911.

|| Thomas Jones, Curate, *ibid.* p. 660.

which I write (April 1846) not one cottager is to be found retaining his piece of land. From 1762 to 1815, the date at which the lastcroft was transferred to a neighbouring farmer, no individual who thus occupied an allotment required any relief from the parish, while those who had lost their land had become regular pensioners. Another instance is that of North Creek, near Burnham, in the same county, which forcibly illustrates the fact that in proportion to the allotments having been taken from the poor, the assessments for the support of such poor have risen in like manner. In 1798 a great extent of common land belonged to the parishioners, and on this land cows were kept during summer, and in winter these animals were furnished with food in the straw-yards of the neighbouring farmers. At that time the poor's rate for the parish was about 1s. 9d. in the pound. Soon after the date above referred to, those common lands were broken up, and allotments apportioned in lieu of them; but it appears that the emergencies of the small occupiers were narrowly watched by their wealthier neighbours, and their patches of land became consolidated with those of the larger landowners. The consequence was, that at the end of seven years the poor's rate had advanced to 3s. in the pound; and in a few years afterwards, when the means of keeping the cows were still further diminished, to 6s. in the pound. In 1817, three labourers still had a cow each, so that the produce, in addition to their usual wages, enabled them to bring up numerous families without ever receiving any relief from the parish—one man had four, another five, and the third six children. Those heads of families who had no land or cows received regularly a weekly allowance of 2s. for each child. In the year 1776, when the population of the parish was 400, the amount expended on the poor was only 95l. 4s. 8d.; and in 1821, when the number of inhabitants was 620, the amount expended was as high as 937l. 19s.; a disparity which, in my opinion, is to be accounted for only by the fact that the labourers have not, as heretofore, a cow, pig, and piece of land. As with individuals, so it has been with helpless societies. Any one turning over the Parochial Returns presented to the House of Commons on the Education of the Poor will meet with cases in almost every page, in which alienation of small allotments are detailed. In Crowle, in the county of Lincoln, is a school in which 20 children were formerly taught; but at present there are no scholars. The donors to this school left two copyhold tenements, and rights of common, together with six acres of open field and uninclosed land; but an inclosure having taken place, new trustees have been

appointed, who have let the land to pay the expenses incurred by the said inclosure, until the debt is discharged. Some years ago, the lord of the manor of Fishtoft in Lincolnshire allowed the inhabitants to inclose nine acres of the common for the benefit of a school *for the poor only*. The tenants in possession assert that they have now a right to claim the land as their own property!

By such and similar means has been wrought out that picture of distress so generally observed amongst agricultural labourers throughout Britain at the present time: the helpless classes losing hold of their small plot of land, and the merging of it into that of their more powerful neighbours. Without attempting to attach to this change an importance which it does not warrant, I may be allowed, and, indeed, it may be well, to enumerate a case or two in past times in which many will see a counterpart to the picture just alluded to. In the breaking up of the minute system of agriculture practised by the early Romans, Pliny clearly foresaw the ruin of the imperial city. The farms of Britain, it is true, are not equal in extent to those which were to be seen in Italy previous to the fall of the Roman Empire, yet in the counties of Norfolk, Cumberland, and Northumberland, many are to be found containing 1,000 to 1,500 acres; and it is sufficient for the present purpose to prove that the tendency of the present times is to throw together large tracts of country to the *complete* exclusion of the labourer as a person directly and primarily interested in any part of its cultivation. Shut out from their rights, the labourers of Italy became little better than slaves: they had no tie of interest, none of affection. How far they form the prototypes of the labourers in the Eastern Counties of England, may be best judged by the calendars at our assizes for that district, during the last few years. God forbid that the same effects should be ever traced in this country as was realized from similar causes in the Roman Empire: well will it be with us if experience or philosophy warrants us in looking for a more favourable result. At the same time, it would be little short of stupidity to disguise the fact that the security and well-being of every nation must depend very materially on the condition of the labouring classes. The greater the distance between them and the higher orders in the enjoyment of common rights, the more unsafe will be the state of society in that community, and the more frequent those broils and disorders which impair the stability of a nation.

Now for the remedy. I have treated of the agricultural labourer deprived of his land, penniless, and more or less discontented; and

as his condition has been found to become deteriorated according to the steps which have been taken to deprive him of his holding, it becomes necessary to urge its being returned to him, and to trace the fair and palpable effect such a measure has had upon him wherever introduced under proper restrictions. But why apportion him land? it may be asked. The answer to this question is, I think, simple and easy. Relief, to be a real spur and benefit to a labourer, must be precarious and conditional, depending on his own exertions. The doles that were distributed at the gates of our rich monasteries previous to the Reformation, were a mere bribe to laziness, extinguishing all solicitous care for the future, and leaving the recipients in an infinitely more helpless condition than those whose sole dependence was upon their own industry and frugality. That system made them not only lazy, but immoral; for though when cast out on the world, many of them were no doubt necessitated to steal, it appears that "no less than 72,000 of those men, great and petty thieves, were put to death in the reign of Henry VIII.*" Reconcile a man to the idea of receiving a support which he has not worked for, and with that reconciliation are prostrated all his best abilities, all effort, and all emulation. Indolent habits become his besetting sin, and the energy of the country gives place to a vicious ease and dependence.

Before the plan recommended can be carried out, all grasping at the few remaining small patches held by poor labourers, must of course be abandoned as defeating its own end; such a system being hurtful alike to private individuals and the stability of the state. Nay further, *the right* of the poor must be recognised, and earnest and hearty steps taken to invest them with that right. Government, indeed, might interfere, and with the force of law compel landowners to appropriate a portion of land in each parish for the behoof of the labouring population; but this step, it is to be feared, would prove to be of little use, severing the link of good-will between the high and low, and introducing a system of antagonism which would end in the discomfiture of the dependent. *The law of kindness* ought to take the place of legislative enactment, not exercised as a mere piece of charity, but as a moral duty, in the same way that a father provides for, and cares for his children. The fate of Greece and Rome, and other nations of antiquity, are leading some, *through fear*, to do something in the way of bettering the condition of our labouring classes; and it is to be hoped that, in so acting they will

learn to see that their efforts are demanded by every principle of justice. Compulsory beneficence is at best a very questionable act, and loses what should form its chief beauty and effect by the manner in which it is administered.

The first thing of importance is not to distract the agricultural labourer by any new employment; but to retain him in that to which he has served a long apprenticeship. *The soil*, then, as his birthright, must be apportioned to him in such measure as his circumstances may demand; and lest any one should suppose that I consider even the best system of allotments as an universal panacea, applicable to every labouring man, I pause to state that beyond what I have seen of their effects not a jot shall be added to their value as a relief to him. What instances I shall give showing their applicableness to his situation, I shall invariably support by a reference. Some men, I am aware, have at once condemned the whole system as Utopian. Its enemies have done so. Inconsiderate friends, again, in talking and writing about it have pronounced it to be the realization in a great measure of the state of perfect existence which poets have prefigured and sighed for, and that which will sooner or later possess the whole land. To the first class, or those who condemn a set of poor men in a circumscribed piece of ground, at hard work, watching, stimulating, perfecting, and finally gathering in the sheaves of corn, I would recommend judgment to be deferred until the plan is more fairly developed *under its best form*, and its effects more generally ascertained. To the other class, I may be allowed to observe, that poets are but ill-qualified judges of what is practically beneficial; and that in the allotment system there is no poetry except that which springs from hard, well-directed work, concentrated upon a small piece of ground. If anything will possess the whole land, it is the same hard work; if aught will deepen the green hue of our crops, or cause them to wave more luxuriantly over the glebe, it is the contents of the manure-tank, carefully and judiciously applied; and certainly, if white and trim cottages are to rise in the wake of the industrious, as they usually do, it would be difficult to find a reason why they should not in the case of those systematic workers who labour in their own allotments. If such things form suitable themes, poets are welcome to praise them; but it is mere folly to connect the results with aught except the "sweat of man's brow," and the important accompaniments of economy, forethought, and skilful management. Those who expect to see every man indiscriminately enjoying himself "under his vine and fig-tree," are sadly

* Description of England, vol. i. p. 186.

mistaken. Such a scene will never, I fear, be realized upon this earth. The allotment system itself will throw out thousands as unworthy to touch the soil which it has appropriated to its most useful purposes. Let us look at the chief agent which it embraces—Vegetation: it is stirring either in a right or wrong direction every hour of our life; of what use, therefore, would sluggards prove in directing such a power? or stupified drunkards far away in the ale-house? or the various other inert classes who hate to work, and who would rather let their crops rot in the fields than answer the demands upon them for exertion? In truth, no system will save such men, and at last, if at all, they are fit only to be the servants of others—their best master being any one save themselves. It is to be understood, then, that to such classes, no hope whatever is held out in these remarks; and that the statements here made have a continual reference to men who, while disposed to be industrious, are yet debarred from exercising that industry to the best advantage.

The desire evinced by agricultural labourers to become possessed of a patch of land to cultivate on their own account, is little short of a passion; and hence it is, as shown under its proper head, that industry and morality have accompanied them wherever introduced in a proper way. Not only does an allotment afford the labourer a subject to talk about to his fellow-workmen during the day, but it is linked to him by the sweetest of associations as the scene where he spends with his wife and family some of the happiest of his hours, after his regular day's work is over. To foster and trace in him this contentment, produced by his renting a patch of land, may appear in the eyes of some to be but of trifling import; but it is really not so. I believe it to be the groundwork of a great part of his happiness, convinced as I am that this adaptation to his tastes and wishes secures many advantages, even if it could be proved that his holding in any instance afforded him no pecuniary reward at all. In one word, then, take agricultural labourers in general, and it will be found that they are delighted with the idea of renting an allotment of land; and this is sufficiently proved by the high price they offer for it, and which avaricious men too often exact from them. Though almost superfluous, it may be well to hear what they say themselves on this head:—

"I have half an acre of allotment ground; I am assisted in cultivating it by my son; I won't give it up unless forced to do it."—*James Hunt, Walsham, Suffolk.*

"I have half an acre of allotment land, and should like to have more. Allotments are the best thing that ever was done in Walsham;

it is the last thing I will give up."—*James Wales, Walsham, Suffolk.*

"The land does me good; I could not pay my rent, nor yet keep house, if it were not for my land."—*Widow Read, Walsham, Suffolk.*

"I formerly received parish relief, and was backward in my rent: now I receive none, and have always been able to pay my way, and I feel happy with my allotment."—*Robert Jackson, Shotesham, Norfolk.*

When an agricultural labourer is found emphatically stating that his allotment "is the last thing he will give up," it is evident his affections, as well as his pecuniary wants, are interested. No one therefore, I trust, can say that in the suggestion there is anything disagreeable to the feelings of the labourer; and in this will be found one of the chief main-springs to exertion.

Of all practical measures introduced for the benefit of the labourers, perhaps none has been so vaguely defined, and so variously pursued, as that falling under the general title of the Allotment System. Most pernicious modes of letting land to the poor have been introduced in certain localities in England, and in many districts of Scotland, bearing the name of Allotments; and their want of success has been invariably put to the account of a measure which, under careful management, is generally attended *with the most beneficial results*. I am anxious, therefore, to point out clearly what I mean by the Allotment System, how it operates, and to detail some instances of the actual working of the plan in districts where I have watched its operation for a series of years. It is well known that labourers are most anxious to become possessors of land as *sole occupations*; but this does not generally answer their purpose. The poor cottar tenantry in Scotland, without capital to stock and cultivate their land to the best advantage, and the pauper farmers in Ireland, are sufficient proofs that this plan does not afford solid advantages to the poor. As a general measure, therefore, I exclude it. What I recommend is, allotments under the joint form, or in connexion with ordinary employment. This is by far the most general way in which the system has developed itself, and is unquestionably the most beneficial to the great bulk of our labourers. It would, indeed, be of little use to invest all the poor men in this country with a piece of land as their sole stay through all the vicissitudes of life; for many of them, either from want of education, or natural activity, or prudence, are not able to conduct their own affairs to advantage; so that the scheme, if tried, would end in disappointment and ruin. There always have been, and always will be, a great proportion of mankind dependent so far upon the remain-

ing portion for subsistence; and though the poor man may fancy that he would be better off were he to be placed in a situation for himself, and independent, as he might think, of his superiors, the probability is that he would soon have to repent of the change. If his behaviour be good, his situation under them is almost certain, and free from the harassing anxiety of a person thrown on his own resources; and what has chiefly to do with the present question is, that if he can have an allotment of land in connexion with such dependence, it is for the labourer, in most cases, safer, more satisfactory, and more likely to stand the test of years, than any other mode of obtaining a livelihood.

At the same time, it is well known to those who have paid minute attention to the working of allotments, that even under the plan here recommended, viz. allotments in connexion with ordinary employment, an injurious system has been practised, alike hurtful to the poor labourers and to the spread of a really beneficial measure for ameliorating their condition. For example, at Stoke-Holy-Cross, about four miles from the city of Norwich, is a group of allotments, let to agricultural labourers residing in the village of Stoke. The land is close to their dwellings, so that no time is lost in walking to it, or in carting manure, &c.; yet here the system has proved a complete *failure*, the holders complaining that they can make nothing of it. The land belongs to a wealthy gentleman residing in Norwich, and is let by him on a different footing to any other allotments I am acquainted with in this part of the country; the landlord making the best bargain he can with the holders, and imposing no restrictions either as to the quantity or the mode in which the land is to be cultivated. The soil is rather poor, resting on a subsoil of gravel, and had been previously rented by a farmer who was obliged to give it up. It is let at the rate of 3*l.* per acre, which is much more than that paid by farmers for *good land* in the neighbourhood. The extent of ground thus occupied is ten acres. The failure has a very distressing effect on the minds of the holders, who, having tried what they considered would have turned out to be a benefit to them, and being so unsuccessful, are in a state of despondency and concern for the future which I hope is not experienced elsewhere. Now, in the adjoining parish to the foregoing are thirty-four allotments, conducted in the best possible way, the extent of soil being apportioned strictly with reference to the numbers able to work in a family. These are situated in the village of Shotesham, about six miles from Norwich, the property of Robert Fellowes, Esq. The Allotment System was introduced here ten years

since, and it has been extended every subsequent year. Its effects in this quarter have been very striking, raising the holders to a sort of *independency*. Vario is causes have contributed to this end; but I think one of the chief reasons is to be found in the discrimination of Mr. Bateman, the land-agent, who manages the estates of Mr. Fellowes. First of all, there were but very few granted about the year 1835, when first introduced here; and those were given to men eager to have an opportunity of helping themselves after their regular day's work was over. At that time they had but a small space, which has since been augmented according to the industry and activity of the respective holders. The consequence is, that no individual among the thirty-four allottees has a yard more than he can keep in the highest state of cultivation. Secondly, the land is good; and what is of great importance, it is in almost every case close to the respective cottages, so that a loss of time, or loss of strength, or loss of assistance, is not experienced. By loss of assistance is meant the loss which every holder of an allotment at a distance experiences in not having his wife, or, it may be, his daughter, at all times to help him; for when an allotment is at the door, those members of a family are of the greatest service in assisting him. Thirdly, they are let at a fair rent—2*l.* per acre—free from all burdens, being such land as a farmer would pay 30*s.* for, subject to the usual outgoings. Lastly, Mr. Bateman takes unceasing interest in the working of the system, which operates as an encouragement to the holders in having their pieces of land at all times in the best order. Under such circumstances the system has worked here as well as it can be expected to do anywhere. It has taken the poor man out of the ranks of pauperism, and placed him in comparatively comfortable circumstances, with brightening prospects before him. Those men who formerly could not pay their cottage rents, have, with the aid of the allotments, ever since paid both house-rent and allotment-rent, at the proper time, without one shilling being lost; and I am proud to have an opportunity of referring to those men who have so distinguished themselves by their industrious habits, and shown to the world the way by which the British labourer may be raised from his present condition. The last time I was in the village, I asked a man on the road if he considered the Allotment System to be a benefit to the holders, who himself happened to be one. "A benefit!" he said; "why, I should not be able to go on without mine; it is everything—a benefit, indeed!" I should occupy too much space were I to follow all the individuals in giving their details connected with the change which the system has wrought in

this quarter; but I earnestly wish that those who are at all sceptical on the point would consult any of those persons who have allotments in this quarter; and I am sure their testimony will pretty much accord with the following instance. I take Robert Jackson, who, before the Allotment System was introduced, was always backward in his rent, and receiving parish relief:—"I am a widower," he says, "with a large family. I receive no parish relief; if it had not been for my piece of land, I must have gone to the parish as before, or have put two or three of my children in the Union House. My allotment is a great stay to me: I have a good crop of wheat upon it—about six quarters to the acre—and I hope to get a prize for it from the Association." The Association here referred to is a society of gentlemen who award premiums to those who distinguish themselves in their district for their good behaviour and industry, raising the largest quantity of wheat on a given space, &c. In this parish it is thought impolitic to question the holders as to the exact gain they make by their field-gardens, so that I asked no questions on this head: it is well known, however, that their returns are very great.

It is my opinion, then, founded on long practice and observation, that no allotment on the joint principle, or along with ordinary employment, should much exceed the limits assigned to them in this quarter. No field garden should contain less than a quarter of an acre, or more than one acre. Half an acre is in general quite sufficient for a labouring man; and I should be extremely unwilling to grant him any more. It is well to bear in mind, that an unsuccessful experiment will be always referred to. A labourer with an unusually large family of sons, so circumstanced that their assistance could be commanded freely, might with safety have three-fourths of an acre, or even a full acre, but this I should consider as a case but rarely occurring.

With this view of allotments kept before us, I shall proceed to enumerate in what respects they affect the condition of the labourer.

First, *they are a source of hope to him.* The hope which a labourer has of being provided for in the workhouse is a mischievous idea, springing from a wrong source, and may be safely pronounced to be the most hopeless of all sentiments. The only hope worthy of encouragement arises from the labours of the poor man himself, not from the labours of others, and inspires him in every industrial art—in digging, sowing, reaping, and in all other services, whether performed for himself or his employer; because he knows, that in

either case, they invariably carry their reward with them. The hopes of the drone end in the workhouse—the allotment-holder, on the other hand, has a source of hope in every fresh field for exertion which he opens for himself. The one is sullen, discontented, and miserable; we find the other singing amidst his toils, incessant and severe though they may be. "My allotment," says John Fenn, one of the Walsham allottees, "is a great comfort to me. I have an idiot son to maintain, and were it not for my bit of land, my wife and family must go to the House." By the House is meant the Union House.

Secondly. *They call into exercise the virtue of prudence.* Where no gain can be made, the labourer is too apt to settle down into a state of indifference. Is it likely that a man will care much about being industrious, when no one by his industry can avoid being a pauper? once enable a man to save a few shillings, and a love of independence takes possession of him, and with that, an incitement to sober and frugal habits.

Thirdly. *Considered as a moral agent,* the allotment system is active and powerful. It is well to dwell on this view of the subject. To have an industrious, contented, and happy population, is even more than can, at all times, be expected in our present state. This, however, the allotment system, when properly conducted, goes far to ensure. One of the most pleasing traits I have observed in connexion with it, throughout the East of England, is the strong link of good-will which it has been the means of forming between the clergyman and the poorer portions of his flock. Of the former, the holdings are in some cases held, and under all circumstances, the clergyman interests himself, more or less, in the working of their small occupations. He has thus the means of making himself familiar to them in the way which they like best—by making inquiries regarding their crops, and suggestions as to the best modes of tilling the land, &c. The consequence is, that a more regular attendance at church is secured, and this step is followed by their families, so that a more decent and orderly behaviour is thus introduced throughout the locality. Sharing, in some measure, the comforts which are enjoyed by his richer neighbours, the poor man now lives in a state of contentment; and contrasting his present condition with what it was formerly, he becomes thankful, and free from the dangerous disquietude which formerly characterized him. I have many facts in my possession, relative to the social and moral condition of the labouring poor, which are fairly to be attributed to the allotments, on which it would be difficult to dwell too long. Orderly and industrious habits are now filling

the places of idleness and crime ; and I have the testimony of those who should be the best judges, to show that a devoutness of feeling, hitherto unknown, is shown by several of the holders. Quietness, I know, is not religion, no more is orderly conduct ; yet no one will deny that a person whose mind is at ease, and who feels that he reaps some advantage from his labour, is more likely to be thankful to the Disposer of all things, and to cherish good-will towards his fellow-men, than he who is constantly harassed with the thought of how he shall provide for his dependant family. The Rev. Henry Fardell, vicar of Wisbeach, thus addresses the writer of this paper, on the effects the system has had in Cambridgeshire,—“I have the honour to acknowledge the receipt of your letter, requesting me to furnish you with the real effects produced on the agricultural labourers by allotments let by me, at Waterbeach, near Cambridge. It was in the year 1822 when I first induced the overseers of the parish to become the responsible tenants of twenty acres, but at the expiration of the first year they evinced a disinclination to be so any longer, and I then made a selection of cottagers, and among them some of the most unruly of my parishioners. The result was, *that every one became a steady good labourer*, and his home, which before was nothing but wretchedness, became the abode of much happiness and comfort ; and instead of the occupier spending his evenings at the ale-house, he found the great advantage resulting from honest exertions. During the number of years which have now elapsed since I first tried the experiment, I have no recollection of any one individual who has been chargeable with any indictable offence, and it is my firm conviction, that there is nothing so well calculated to raise the character of the English labourer, as that of making him feel that he is independent of parochial relief, and is placed in such a position as to be able to support himself and his family by his own honest exertions.” I add one other testimony on the moral effects of the system on the labouring classes :—“Since I have resided in this part of the country,” says the Rev. E. J. Howman, Bexwell, Norfolk, “I have not been brought so immediately in contact with the system as I was before, but you will see that my opinion in its favour has not diminished, when I tell you that I hope after Michaelmas next, to have twenty allotment tenants of my own : at the same time, I must say, that the more I see and understand of it, the more firmly is the opinion which I have held from the first of my turning my attention to it, rooted in my mind—that in order to be of any utility, it must be purely and entirely voluntary—that it must

form a connecting link of kindness between the landowner, the clergyman, and the labourer ; and that if any attempt is made to render it compulsory, to meddle with it by legislative enactment, or to mix up with it, in any shape, poor-law or parish officials, or management, the result will be utter and irretrievable failure. With regard to the system in general, I believe it to be a most valuable means of bettering the condition of the poor ; every instance of its adoption which has come within my observation, with one single exception, has been in every way productive of good. The holders of allotments, I have observed, are always better conditioned, arising, no doubt, from their having employment and amusement for their leisure hours, which, leading their minds to better things, keeps them from the ale-house. The possession of a little property of their own makes them more careful of that of others. Indeed, I do not recollect an instance of a holder of an allotment having been brought to trial for any crime.”

Fourthly. *Its uses to the labourer pecuniarily considered.* In this respect the allotment system displays itself to the highest advantage. It affords him relief according to his industry, whilst it is to be feared that the popular method of relief is too often in proportion to his idleness and vice. I have no hesitation in stating that, in every case where the best mode of the allotment system has been adopted, many instances might be found of labourers emerging from a state of want and dependence to that of comfort and contentment. “I mention one remarkable change,” says the Rev. H. Fardell, of Wisbeach, “with peculiar pleasure. The labourer *had for some years been receiving twelve shillings a week relief from the parish*. I accepted him as a tenant to half an acre ; and soon after the second year’s occupancy, I saw twelve pigs in his yard, four of which were fit for the butcher. He had besides upwards of eighty bushels of potatoes, and between eight and nine bushels of wheat, *and was no longer in receipt of relief from the parish*.” “My allotment,” says Edward Nice, a Walsham allottee, “does me a great deal of good. I should not like to give it up ; if I did, *I should be starved*. I would not lose my land for 20*l*. I got four coombs of white wheat off a quarter of an acre ; and four and a half coombs Windsor beans off the same quantity of land. I and my sons work the land. When we have nothing else to do, we go and work upon it ; and, as I manage to keep my wheat, I have always bread in the house, when we can neither find work, nor work upon the allotment.” But isolated instances, it may be remarked, are not a fair criterion of the work-

ing of the system, as it affects the masses. I therefore give the outlay and profit of a few individuals, taken at random from a number of allotment holders in my own neighbourhood, taking care to set down every item of outlay as well as profit, confident that the statement will bear the strictest investigation. As this group of allotments is considered to be under first-rate management, it may be desirable to annex the rules under which the benefits detailed here have been wrought out, so that the same conditions may be imposed in other quarters:—

“An agreement made on the 10th day of October, 1845, between the Rev. P. Gordon, of the parish of Cranworth, on the one part, and A. B., of the same parish, on the other.

“The Rev. P. G. agrees to let, and the said A. B. to hire, for one year (and so on, from year to year, till legal notice is given to the contrary) a piece of land containing about half an acre, being part of an allotment belonging to the said P. G., and for the rent, or sum of thirteen shillings, to be paid to the said P. G. on the 11th day of October, annually, free and clear of tithes.

“That in the event of the rent not being paid within three months, that the said A. B. will give up the land at Christmas, together with the straw and manure thereto.

“That the said A. B. hereby agrees to cul-

tivate the said land in an husband-like manner with the spade, and not to plough the same.

“That he will crop one moiety of the land with potatoes, to be dug eleven inches deep, and manured.

“That he will crop the other moiety with wheat, beans, or oats; and so on, potatoes and wheat, beans or oats, alternately.

“That he will keep a pig at least eight months during the year, and shall and will consume all the straw, and lay and spread all the manure therefrom arising from the said land; and will not keep any horse, cow, donkey, or other beast, upon it; and should he give up the land, will leave all the straw to the incoming tenant.

“That the fences shall be clipt annually, or otherwise neatly cut off; and the ditches to be cleared out annually in July.

“That the said A. B. will annually cut all the fences, the other occupiers paying a proportion thereof, according to their occupations, without in any way interfering with them.

“That the several occupiers shall, and will, keep in repair their respective gates, &c., and shall clear out the division ditches themselves every July, or employ some person belonging to the parish to do it, as well as any other work that may be required to be done which they cannot do themselves.

Witness our hands, P. G.
A. B.”

CRANWORTH ALLOTMENTS, 1844-5.

Dr.							Produce.										Cr.	
Outlay.																		
Name and Occupation.	Space.	Rent.	Poor Rate.	Labour.	Seed Corn.	Total Cost.	Potatoes.	Wheat.	Oats.	Produce of Wheat & Oats	Value of Potatoes.	Value of Wheat.	Total Value.	Profit of each.	Pigs fatted.			
	Acr.	s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	Sks	Co. Bu	C.B.P.	Qrs.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	Stn. each			
Hen. Clarke, Agricl. Lab.	½	14	1	4	0	5	0	12	0	1	12	4	26	2	2	4 of 12		
William Fox, Agricl. Lab.	½	14	1	4	1	0	0	10	4	2	5	8	25	2	2	2 of 12		
J. Webster, Agricl. Lab.	½	14	1	4	0	0	0	11	0	1	6	4	26	2	2	3 of 13		
M. Middleton, Thatcher...	½	14	1	4	1	10	0	11	6	2	16	10	30	2	3	3 of 11		
H. Spragg, Bricklayer	½	15	1	6	1	10	0	10	3	2	16	9	35	3	0	8 of 12		
E. Lincoln, Blacksmith...	½	15	6	1	6	2	0	11	6	3	8	0	23	2	3	3 of 12		
E. Norton, Agricl. Lab.	½	13	1	4	0	14	0	11	6	1	19	10	26	2	1	5 of 12		
E. Norton, Agricl. Lab. ...	½	13	6	1	4	0	4	6	0	9	0	1	30	0	0	5 of 12		
	4	5	11	11	7	3	6	1	7	1	17	13	7	226*	18	14		

Total Value.....£54 1 3

Total Cost 17 13 7

Leaving a clear profit of 36 7 8

* The sack of potatoes here mentioned, weighs 200lbs.; so that the total quantity raised was upwards of 20 tons.

† The coomb here mentioned is half a-quarter imperial measure.

Note.—It will be observed that nothing is reckoned for pigs fatted, as detailed in the last column, the value of the potatoes with which they were fed being given in the fifth column of the Credit side, but still something might have been fairly added to the profit from that source.

Now, the results are as just detailed; and I shall merely premise that the individuals were not by any means selected with a view to give a more favourable result than the general facts of the cases warrant. I have, in every instance, retained the figures as furnished to me, merely arranging them in such a way as I think will enable the reader at once to see clearly the result, both in the aggregate, and as to individual benefits conferred.

Thus, independent of all the other blessings which they impart, there is upon an average 4*l.* 10*s.* yearly added to the income of the poor labourer by his having half an acre of allotment land let to him under wholesome regulations. There is nothing theoretical in this: it is done as regularly as the seasons come, and is open to all the searching inquiries that can be made concerning the plan. The allottees are to the number of seventy, and the opinion amongst the labourers themselves regarding the benefits which have accrued to them by their having the land is strong and uniform. Is it unfair, therefore, to conclude that with these facts before their eyes, our land proprietors and influential gentry are so far responsible for a portion of the misery and wretchedness existing among labourers in other districts of Britain? What has been done here can be done anywhere; and if the directions for introducing and carrying out a proper system of allotments, as given in another part of this paper, are attended to, the matter becomes easy, and one of the most delightful engagements to which country gentlemen can betake themselves. If men were to see poverty, as I have seen it, throw off its rags wherever the allotment system has been fairly established for a couple of years, this plan of relieving the poor would have surely been adopted long before this time in every village and district throughout the kingdom.

Fifthly. Allotments are not only useful to a labouring man himself, but *they contribute powerfully to the strength and prosperity of a nation.* The prosperity of a nation consists not in indiscriminate numbers, but in proportion to the number of its industrious and virtuous inhabitants, who, as renters of land, have an immediate interest in defending the Constitution. It would be nothing short of burlesque to ask if the popular method of relieving the poor ever inspired any one with love for his country, or invigorated any one in the hour of public danger. If the expression may be allowed, the labourer who is invested with a stake of his own, sees every question through that little holding, and is on that account more unlikely to become an associate of the disaffected. At a time when the masses

were interested in the soil, Latium was wont to raise mighty and energetic armies, but in the late era of Augustus, a few dispirited peasants only were to be found, careless about the honour of their country, and the results which they themselves might experience. The enthusiasm which prompted their ancestors to appear in the field was forgotten, and falling into the meanest state of vassalage, they became nothing better than slaves, entirely at the disposal of the wealthier inhabitants of Rome. In fine, the whole history of that empire proves that her multitudes of brave yeomanry were raised at a time when all, or mostly all, had an interest in the soil, and when he who grasped at more than a few acres was accounted a dangerous citizen. When a labourer can multiply his resources in a country to which he is naturally attached, it ought to be the policy of the influential to retain him by a link of interest in connexion with that country, for no nation can continue to be great where a considerable proportion of its population is wretched and miserable.

Sixthly. *Allotments increase the productions of nature.* Here may be observed a remarkable proof of the absurdity of the new system, as it is called, of political economy, which supposes that the increase of population will soon press heavily upon the means of subsistence. Why has it not done so before now? There is indeed a point at which an increase of labour will cease to produce a corresponding quantity of food; but the recent improvements in minute agriculture prove that this point is so very remote, that it need not alarm mankind for thousands of years to come; for after the husbandman has arrived at the maximum in *multiplying* his produce over a given area, he has to begin the work of adding to the *number of times* he can gather such produce from the bosom of the earth during one season. John Digby, a journeyman basketmaker, living in the village of Buxton, in the county of Norfolk, raises three crops of potatoes from the same piece of ground every season, a fact which goes far to overturn the whole theory of Malthus and his followers. In the time of Charles I. it was believed that the population, advancing at the rate it then did, "could never be governed nor fed;" yet it is well known that every case of incomplete subsistence which may have occurred, did not arise from actual scarcity of food, but from an unfavourable combination of circumstances operating against the individual for the time. In order to show to what extent the productions of the soil may be increased, I shall mention the case of John Dumbrell, of Javington, in the county of Sussex, who occupies a few acres of land as a sole occupation. This person, who was

formerly a burden to his parents, entered on three acres of land in 1837, and he has since had his holding increased. His landlady (the late Mrs. Gilbert) lent him 5*l.* to purchase a cow, and his father provided him with two pigs. The loan was paid off at the rate of 1*s.* 6*d.* weekly, and then refunded to him again for the purpose of buying another cow. The second loan was also repaid in weekly instalments. The rent for the three acres is 12*l.* 12*s.*, and Dumbrell observes, that "but for those three acres, they (referring to his wife and family) must have gone into the Union House at a cost of 39*l.* a-year, to live their useless and unhappy lives; whereas now, besides maintaining themselves, they have paid in rent, taxes, and rates 12*l.* 12*s.*, and contributed by the butter, calves, and oats, towards feeding others, full 30*l.*, or 10*l.* per acre." To keep two cows, and maintain a family of five persons, is thus accomplished by the indefatigable holder; and it is done in the following way, which shows the powerful effects produced by the application of liquid manure:—He has about half an acre of wheat, half an acre of pasture, fourth acre of oats, fourth acre of Italian rye-grass, and the remainder of the land occupied with green food for stall-feeding, such as clover, tares, rye, cabbages, potatoes, mangold-wurtzel, and turnips. *Two or three* crops are obtained from the same soil in one season, a plan which is constantly kept up by the allotment holders, but which I have not seen in general practice among extensive farmers. Thus, rye is cut green in the spring, and succeeded by turnips and potatoes, the last crop being in its turn succeeded by cabbages planted in June *between the lines*, and which of course take possession of the entire soil when the potatoes are removed in August. Throughout all the processes, the liquid-manure tank is constantly resorted to. After the rye, winter tares become fit to cut, and when they are got off, more turnips and cabbages take their place. When the tares are exhausted, the grass and clover are cut; and this crop, with the aid of the liquid-manure, is kept up throughout the summer and autumn so as to afford four cuttings.

Seventhly.—*Allotments benefit the labourer by withdrawing him from the ranks of pauperism*: in other terms, they materially lessen the poor's rate. It is a great thing to have to say of any system, that it converts the receiver into a payer of a rate for the benefit of others. It will be permitted me to ask, what else has so universally done this? I dwell not at present on the other changes wrought upon the man, but upon the actual *gain* which it enables him to make. John Harris, of East Dean, in the county of Sussex, had been for years in the Eastbourne

Union-house, at a cost to the parish of 17*l.* 7*s.* weekly. He is now a payer of rates and taxes, and is contented and happy, declaring that he would not give up his holding on any consideration. The allotment system has been in operation in the parish of Terrington St. Clement's, in the county of Norfolk, for thirty years; and Mr. Ockley, who collects the rents, informs me that for that long period he has not had a defaulter on his books. The farmers, who strenuously opposed the plan when first introduced, are now the chief agents in extending it, a fact which will cause no surprise when it is known that one of the first effects of the system in this quarter was to relieve the rate-payers from the expenses attending the support of the following individuals who till then were regular pensioners on the parish: Robert Sharp, John Goodson, T. Ledbetter, John Cranfield, William Chilvers, Henry Bunting, William Thompson, and James Boughen.

Eighthly.—*Allotments foster a spirit of emulation*. The work-house system levels all distinctions, and actually quenches every idea of overcoming difficulties. An innocent rivalry and a virtuous ambition, are objects which should be particularly encouraged among the poor, for without them, energy of mind and action, those indispensable requisites in the peasantry of a great country, are in danger of being lost. Amongst the younger branches of those families connected with the Terrington allotments, an extraordinary spirit of emulation exists, which has led them at once to the vital springs of action in the vegetable world—springs which were hitherto quite overlooked or neglected. Their cares may now be said to be incessant in collecting all sorts of refuse subject to decomposition, for the purpose of fertilizing the soil; so that whilst they enrich themselves by having a good store of manure, there is a neatness observable about their dwellings, which is the result of their clearing away to the compost heap all vegetable and other matters of an unsightly nature.

Finally, *Allotments form by far the most suitable mode of relief to Agricultural labourers*. The soil is the direct gift of Heaven to man. It is filled with plenteousness for the sustentation and comfort of all who till it; and it is cruel any longer to debar the poor labourer from sharing of its bounty. How easily is the labouring man deceived by insecure plans of benefit societies which promise him relief; but how just an estimate has he of the worth of a patch of land! Here he finds at once a simple scheme for the gratification of his powers. John Allum, a Walsham allotment holder, thus speaks of his patch of ground:—"I have a wife and

five children; I could not think of giving up my allotment, as I should soon go into the Union House. I should prefer holding my land to receiving *any* allowance statement." James Drake, of the same group of allotments, states, that "he should be without work a month in the year if it were not for his land; he must then apply to the parish. He could not pay his rent if it were not for his allotment. He has saved his wheat this year for that purpose." Unlike other employments, allotments form a school in which a labourer can train up his children, teaching them that which will be required of them in after years. They are equivalent to the benefits which a Savings' Bank would afford were one planted at every one's door. Every spare moment's labour is deposited, and whilst some Friendly Societies may deceive him, the labourer knows well that the soil is faithful, fulfilling to him the promise, "as ye sow, so shall ye reap."

Before closing this part of the subject, I shall give a few more instances in which the best mode of the allotment system has fallen under my observation; and I am sure that no one who reads the following evidence attentively, can deny that he who delays carrying out such a measure, where needed, incurs a very serious responsibility.

Waterbeach allotments, near Cambridge. —These belong to the Rev. Henry Fardell, of Wisbeach, a gentleman who has shown himself to be sincerely interested in the welfare of the poor, and who has taken the greatest pains to better the condition of his poor parishioners. I am happy to say his exertions have been completely successful. The allotments here extend over a space of thirty-eight acres, forty holders occupying half an acre each, and eighteen occupying an acre each, the latter being fen land. These holdings are let on easy terms, sixteen shillings being the rent for each of the half acres, and twenty shillings the rent for each of the acres. The land is alternately planted with wheat on one part, and potatoes, onions, and other vegetables on the other; and some of those who have acre allotments, and a right of common as well, manage to keep a cow very easily. In this case, immediately after the corn is removed from the ground, part of the land is sown with rye and vetches for food early in the spring. Towards the latter end of April, the green food is removed, and potatoes planted in rows three feet distant from each other. During the month of June, lines of Drumhead cabbages are planted between the drills of potatoes, and by the time the cabbage-leaves get to their full size, the potatoes are fit to be removed, an operation which by no means disturbs the roots of the cabbages, but serves, as the labourers say,

to earth them up. So heavy are the crops of cabbages thus obtained, that they have been sold in the village at the rate of 35l. per acre. They are consumed in time to allow of the land being planted with wheat, which is always done by dibbling. Thus a crop of rye and vetches is taken off in April, a crop of potatoes in July and August, a crop of cabbages in November, and a good braird of wheat appears on the land before the year is out! To such men, and all who witness their operations, the idea of a time coming when there shall be more people on the earth than can be supplied with food, becomes a very harmless and amusing tale. These humble allotment holders show clearly—recording it every season—what a mighty feast Nature is capable of yielding, if the elements which she has placed within the reach of all were only actively employed.

Terrington St. Clements.—This village lies in the hundred of Freebridge Marshland, in the western extremity of the county of Norfolk, and is four miles distant from the town of Lynn. The allotment system was established here in 1817, chiefly through the exertions of the late vicar, the Rev. Ambrose Goode; and so successful has been the results, that every one in the neighbourhood, including its former enemies and opposers, frankly admit that it has produced a very happy change morally and pecuniarily. In the first instance, two pieces of land, containing about twenty-five acres, were rented of Lady Frances Bentinck, also a friend to the system, one of the fields containing twenty-two acres, two roods, thirty-nine perches, the other about three acres; and, as soon as it was understood that the field gardens might be had, notice was given that such of the poor parishioners as thought they could obtain a livelihood by occupying a piece of land in connexion with their usual employment, should apply for the same to Mr. Goode. The parish authorities forthwith met, undertaking to guarantee the rent, and selecting the proper persons from the list of applicants. This selection was made chiefly with a view to afford the means of relief to the most needy; but in a certain measure to try the effects of the plan on labourers of different characters. Thus, several were selected who had not received parish relief at all, and who had brought up large families. Afterwards, those were taken who were above fifty years of age, then such as had three or more children, including some of the worst and most troublesome men in the parish. They had their possession given to them by lot, so that even the appearance of undue favour might be completely avoided. This arrangement referred to the larger piece of twenty-two

acres and a half, each man, to the number of twenty-two, having, with one exception, *a full acre allotted to him*, leaving one with half an acre only. An acre was occupied by a road cut through the middle of the field, dividing the land into two equal parts, and affording the labourers an easy access to their holdings. After a few years' trial, it was found that *an acre was in most cases more than a man with his family could manage without detriment to his employer*, so that the number of holders was increased to thirty-eight, viz. thirty-three occupying half an acre each, and five an acre each, the rent being at the rate of 2*l.* 6*s.* 3*d.* an acre, including all parish rates. Up to the present time (April 1846), the plan continues to work remarkably well, none of the labourers applying for relief to the parish, except in cases of severe illness in their families. Twenty-two out of the thirty-eight are members of benefit societies; and they have appointed a surgeon at a given salary to attend upon their sick, which is a great advantage to them, and prevents any member from defrauding the society, as is often done, under the pretence of illness.

Cranworth, Southburgh, and Reymerton Allotments.—The villages where these allotments are, lie contiguous to each other in the very centre of Norfolk. The allotment system was introduced here about fifteen years since by the rector of the parishes, the Rev. Philip Gurdon, who has devoted a great portion of his time in devising measures for the benefit of the poor, and who in this instance, as well as in others, has been completely successful. I have been fortunate enough to obtain from this gentleman an account of the working of the system up to the present time, and from his watching its progress so narrowly, I am sure I cannot do better than let Mr. Gurdon speak for himself, by transcribing his letter as under:—

“*Cranworth Rectory, August 14, 1845.*

“SIR,—According to your request, I hereby forward to you such an account as my time at the present moment will permit, of the course pursued by me in establishing the allotment system; the plan adopted to ensure its success, together with a copy of the agreements, &c. Having personally inspected them before the crops are severed, you will be enabled to form your own opinion of the manner in which they are cultivated; and, by entering into conversation with the respective occupiers, the best opportunity will be afforded you of judging how far they have tended to ameliorate the condition of our poor. Several years having elapsed since I first established the allotment system in this and the adjoining parishes, I have been enabled, and I trust with some degree of accuracy, to test

the matter, and to ascertain whether the apparent advantages were real or ideal.

“Having been much gratified with what I had seen of it at Audley End, it struck me as being the most feasible plan, at that particular time, of improving the condition of the labouring classes more immediately under my charge. In the year 1831, when I first took the subject into my serious consideration, society was fearfully disordered by the evident discontent that was prevailing amongst the lower orders throughout this and other counties; and I felt convinced that it principally arose from want of work, accompanied, as is most natural, with a prevailing complaint of the introduction of machinery. This, no doubt, was considered in those times (though perhaps a mistaken notion) to militate strongly against the power that the labouring man had of procuring a livelihood. At this particular period the baneful effects of several improvident marriages were beginning to discover themselves in the parish in which I reside. A state of things appeared to be fast approaching which threatened the peace and happiness of society, whilst it was evidently destroying all the comfort of our peasantry, or I might here say, poor; for I observed that the church gate was thronged every Monday morning with applicants for work, or with peremptory demands upon the overseer for allowances of money, who, generally speaking, was left to discuss by himself (though not to *settle* the matter), amidst grumbling and marked disrespect from all, being rarely attended or supported by the other rate-payers and occupiers in the parish.

“Having attended several of these meetings, and seeing no prospect of a sufficiency of work being supplied to those requiring it, and more especially the young men, I considered how I could procure some land to occupy the time of those who could not secure a sufficiency of labour from the several occupiers of the soil. Having observed that the surveyor's lands, or those portions allotted at the time of the general enclosure for the repair of the highways, generally contained *clay* instead of gravel, and that they were also in a disgraceful state for want of improvement, I first commenced operations *upon them*, extending my system very shortly to those denominated *poor lands*, i. e. lands set apart for providing fuel for the poor. After having called meetings, I made application for a lease of that species of property. In Cranworth and Southburgh I succeeded, but failed in my application for it in the parish of Reymerton. At that time a strong prejudice existed against the allotment system, as being supposed to lead to various evils—such as creating an injury to, and causing an interference with, the ‘labour-market,’ facilitating the too common practice

of plunder on the part of threshers, who would in future, it was asserted, have the power of mixing the corn of their master with the produce of their own land, by which means they would easily defeat justice, &c. It appeared, therefore, absolutely necessary to be guarded most carefully against objections, and consequently I framed what otherwise might appear to be stringent rules, but they were such as seemed to me most likely to afford a security against the evils portended; and after several years' experience, I believe I may attribute to them the *success which has attended* my own allotments; whereas I fear that many others have either fallen to the ground or into disrepute for the want of them; though, perhaps, the high rents demanded may have materially affected the fair working of the system with many that I have seen in different parts of England, whilst they have destroyed the advantages which would otherwise assuredly have arisen from the additional outlay of labour on the part of the poor and industrious. With the view of guarding myself against all these malpractices, I resolved to exercise every caution in my selection of tenants, and consequently I entrusted no one with an allotment who had been convicted of any dishonest act. At the time of hiring I have invariably explained that a notice will immediately be given to quit in the event of any conviction taking place when in possession; and I have always avoided those who did not attend public worship on the Sabbath day, either as members of the Establishment or of the congregation of Dissenters to which they may belong. I appointed the hour of twelve on Michaelmas Day for the payment of rents, with the understanding that any person in arrear more than three months after that day without specific leave, would consider it as equivalent to a notice to quit the land at Christmas, as the termination of those three months.

"You ask me, what effects the allotment system has had on the poor-rates? In reply I may observe, that when I first commenced with it we had several instances of high allowances being regularly made, under the Poor Law, to idle and profligate men. Not many weeks, however, elapsed before strong remonstrances were made against these men by the occupiers, all of whom, according to my agreement, had to pay to the rate themselves; and although I allow we were indebted to the New Poor Law for the abolition of this mal-appropriation of the public money, still those who had persuaded the overseer that they were unfit for work were soon found labouring occasionally on the allotments, whilst the complaints of the labourers themselves had the salutary effect of preventing fresh annuitants from being placed so readily on the sick and infirm list of

paupers. So, in the course of two or three years, those who had been living in the most abject poverty were to be seen emerging from that situation to *one of comparative ease and comfort*. Many are the instances which I could point out of this nature.

"I am not aware of a single instance of *dishonesty* (notwithstanding what was foretold would be the case) having occurred, that can be considered as arising out of the allotment system. I have removed one man who had twice been convicted under the Game Laws, and who had neglected his children; and I am about to give notice to another just convicted at the last Quarter Sessions for wood-stealing. One I have removed for cross-cropping, and another for general neglect of his allotment. I have not one shilling of arrear; and I think I may say that all the occupations are in a creditable state, whilst I have observed that those who have the neatest allotments are the very persons who are the most regular attendants at church on the Sabbath day.

"I have satisfied myself that widows and team-men cannot manage properly more than a quarter, and none more than half an acre. In short, the true principle is to give them as much land as they are capable of cultivating properly without interfering with the time required of them by their respective masters, where they are regular labourers.

"One great advantage arises out of the employment given by the owners of these allotments to young inexperienced men who, in the winter and spring times, are frequently out of employ. The work being put out at the fair worth, but no more, renders due exertion necessary to secure good wages, whilst the employment of them at those periods has saved many a young man from the Union House, and from that beer-house profligacy and ruin which arises out of idleness amongst the lower orders. Many a youth has also been taught the rudiments of husbandry under the immediate instruction of his parents on these allotments, which are invaluable in consequence of the decrease of piece-work throughout many parts of the country.

"Various have been the opinions expressed both in and out of Parliament respecting the benefits to be derived by the poor man from these allotments, and naturally so, *for there undoubtedly will be different degrees of success* according to the systems adopted by the respective landlords, as well as according to the attention paid to them by both parties.

"I do not apprehend that the benefits to be derived from them will fully appear in any case where *spade husbandry* is not strictly carried out, and the greatest cleanliness maintained. To ensure that system, I have adopted,

wherever I could, small entrance-gates, of such dimensions as should prevent the possibility of carts, and other farmers' implements common in use, being introduced upon them. To avoid, also, every chance of dispute as to the boundaries, small ditches, which answer the double purpose of fences and draining, are introduced between each occupation. To ensure general neatness and regularity respecting the clipping of the fences which surround the fields, one of the occupiers is selected to take care of them, whose duty it is to collect the poor-rates and pay them to the overseer of the parish, who would otherwise be put to unnecessary trouble and inconvenience.

"The advantages to be derived from procuring the Poor Land and Surveyor's lands for this purpose must be apparent to any person of observation who has travelled about the country, as they will commonly discover themselves by their unimproved and slovenly appearance; being, generally speaking, let to small farmers from year to year, at an exorbitant rent, who are unwilling to lay out anything upon them, in consequence of the uncertain tenure, to improve their condition. Wherever the allotment system is adopted upon them, and carefully attended to by some principal owner, or by the clergyman of the parish, you may depend upon it that they will,—to use an expression of that great and good man, the late Earl of Leicester,—become benefactors to their country in general by raising 'two blades of corn where only one had grown before,' and have the blessings of the poor man to crown their undertaking.

"I am, &c.

"PHILIP GURDON."

The soil here is a good loam resting on clay, and is what would be generally considered as well adapted for growing wheat. The variety here grown is the Golden crop, and from five to six quarters an acre is the quantity usually produced. Of Tartarian oats, several of the holders grow at the rate of ten and eleven quarters per acre.

All the instances here recorded have fallen under my own personal observation. I have seen and watched the development and progress of the system in the different districts detailed. I have conversed with the holders, who, as a class, form a new race of men; their dwellings indicate a happy change in their condition, and I therefore unhesitatingly urge the adoption of the plan, *under judicious and strict management*, throughout every district in Britain.

The plan has been objected to. A word or two, then, with the objectors. I commence with an article which will be found at p. 403 of a Report by the Poor Law Commissioners

on "The Sanitary Condition of the Labouring Population;" it is headed, "Erroneous Principles of Cottage Allotments in small Farms," and consists of an examination of the Rev. Thomas Wheateley, Cookham, Berks, whose evidence is corroborated by Mr. Terry, an extensive farmer in that place, and of the statements of two other individuals, whose names are not given. "Many mistakes," says Mr. Wheateley, "are prevalent with respect to the profits from keeping cows, sheep, geese, pigs, &c., for I do not believe that any of these are really profitable; and though I am glad to see a pig as an appendage to a cottage, (if the cottager's employer has no reason to be sorry,) because the pig serves as a sort of savings' bank to the labourer; for if the labourer had not the animal, he would not put by and out of his reach, from day to day, the money which the pig costs him in fattening; yet, it is notorious that a labouring man pays more dearly for his bacon than he would do if he purchased it ready prepared to his hand." "The only advantage," adds Mr. Terry, "which he had in keeping them was in using them to collect the refuse corn, which would otherwise be trodden under foot at the barn door and rendered unmarketable; the office of the pig was to gather up this refuse, and convert it into a marketable commodity, pork." "I do not think," adds Mr. Wheateley, "allotments of land to the poor beneficial. I had rather see the allotments gathered into a large one, a farm, and the labouring man employed at good wages by a superintendent managing the whole at his own risk, and for his own interest, in the share to which his undivided and greater attention and anxiety justly entitle him,—that is, by a thriving farmer. The poor man must be a poor farmer, and he had better serve a rich one. * * * If what are called 'ample allotments' are given, it appears to me to be a sort of wholesale almsgiving, attended with more than the usual mischiefs attendant upon most almsgiving. The orchard and garden before me might, if cut up into allotments, serve for six families of young labourers. It may be all very well to say, 'Take these, my good men, and be happy;' but when, in the progress of population, there arises four times six families to be fed from the same soil, where will then be the happiness of the allotments? What, I submit, are small farms but ample allotments?—and what, when stripped of romance, is found by experience to be the superior condition and power of production of the small farmers? Are they not, even where they farm their own lands, almost universally failing—like the small manufacturers against the larger ones—in competition before the more scientific management, economy of labour, and more power-

ful application of capital, of the large farmer? What is all Ireland but a country of cottage allotments? And what is there in that theatre of disorder and wretchedness that should induce the benevolent (or those who may have in their eyes the immediate temptation of *Irish rents*) to make trial of any such system in England?" With regard to the first point, relative to the keeping of pigs, every one must be struck with the glaring oversight of these witnesses in omitting all allusion whatever to the value of the manure produced by these animals. Mr. Terry speaks of the office of the pig, but he forgets that it is two-fold,—fattening the land as well as fattening itself, the former being the *chief* inducement to every cottager in providing himself with this useful agent. In Belgium, the small peasant farmers take every opportunity of prevailing upon those who have the charge of stock passing in their neighbourhood, to let sheep and cattle rest within their premises, just that they may have the advantage of the manure which they leave; and in order to show the value put upon it, I may mention that it is not unusual for those farmers, on such occasions, to contract to afford the cattle a considerable quantity of food as a recompence for such manure. So universally are pigs to be found in the quarter where the writer of this paper resides, and their agency so clearly understood, and so pointedly relied upon, that out of twenty of the owners, nineteen would be inclined to treat the defect in the foregoing evidence as wilful. On the question of large and small farms or allotments referred to by Mr. Whateley, a great deal might be said; and it has, indeed, occupied the attention of almost every writer on ruraleconomy. The subject is purely practical; and without engaging in any lengthened controversy to show the relative advantages of both systems, it will be sufficient to state that, however well a thousand acres in one farm *might* be cultivated, it has never yet been done in anything like the degree of perfection obtained by the minute operations of the spade and fork. The chief reason for this difference is, that in the case of the large farmer the work is performed by hired labourers, who are generally employed at a very low rate of wages, and have no direct interest in the prosperity of the farm. In the other case, the labourer is primarily excited to exertion. He is eager and watchful; up at four instead of six o'clock; and in order to increase his stock of manure, has scoured every road and lane in his neighbourhood before the sun rises. He digs his ground deep, manures it well, carefully inserts the seed, and fosters by every means in his power the crops upon which he depends for subsistence. Other men's eyes, arms, and attention, are dispensed with;

for if assistance should be required, it is furnished in most cases by members of his own family. But setting aside for a moment the immediate agency exercised over a minute system of agriculture, the very implements in use under the allotment system leave the plough at an immeasurable distance in the back-ground. The late Mr. Falla, nurseryman, Gateshead, practised spade and fork husbandry to a considerable extent, and the result was thirty-eight bushels of wheat by plough per acre, and fifty-eight and a half bushels by the spade. At Sherborne, in Warwickshire, within four miles of Leamington, Frederick Harris, an agricultural labourer, obtained by spade cultivation sixteen bushels of wheat from a piece of ground containing about one quarter of an acre. Instances such as these might be multiplied without end. It does not follow, therefore, that there would be any propriety in gathering the allotments "into a large one, a farm;" nor does it appear inevitable that, blessed with such returns as I have instanced, "the poor man must always be a poor master." The other subject touched upon by Mr. Whateley is the common one brought forward by some political economists, and is full of prospective terrors. "But when," says he, "in the progress of population, there arises four times six families to be fed from the same soil, where will then be the happiness of the allotments?" The question is one between the Creator of all things and the creatures he has made. "Dwell in the land, and verily thou shalt be fed," is the voice of Inspiration on this head; and we have the experience of 6000 years to refer to in confirmation, if any were needed, of its truth. Has not *Time*, therefore, weakened, if not falsified, this dogma of political economy? Indeed, many such bugbears might be set up in the remote future by the very reverse of the position alluded to. What, for instance, it might be asked, would be the consequences if every one were to raise three crops of potatoes from the same spot of land, as is now regularly done every season by John Digby, a journeyman basket-maker, in the village of Buxton, in the county of Norfolk? Where would the population be found numerous enough to consume the immense increase which would then be brought to market? Why, nowhere; and the capacious Thames, or the sea, would form the receptacle for the superabundance. One word more, and I have done with the remarks of Mr. Whateley. This gentleman instances Ireland as a country of cottage allotments, and asks if there is anything there to induce the benevolent to introduce the system elsewhere. Ireland may have its allotments, but certainly they are not cultivated; and so long as it remains "a theatre of disorder and wretched-

ness," as Mr. W. admits it to be, how can the arts of peace be prosecuted to a degree to give us any indication of what is really good or bad in the undertaking? It is scarcely fair, therefore, to form any opinion of the allotment system from the picture presented to us by Ireland, where so much operates against the improvement of the land either on a small or large scale. It is well known that parcels of land are given there to those who are really indifferent about cultivating it; and this is done in many cases by landlords, with the view of adding to their influence in political matters. It is, moreover, notorious that the great proportion of the labouring classes in that country prefer idle, reckless, and exciting scenes to the cultivation of their crops. Fairs, funerals, weddings, or whatever else diverts for the hour, have always had charms for them which the most urgent necessities of their families have failed to dispel.

But it is to be remembered that, though under certain circumstances, I have no objections to allotments *as sole occupations*, I by no means recommend them as a general employment for our agricultural labourers. The allotment system, in its best shape, such as I have recommended in other parts of this paper, is not at all understood either in Ireland or Scotland; and hence it is, that in both countries, we meet with a race of pauper farmers keeping up a protracted and very unnecessary struggle with difficulties, caused entirely by placing themselves in a wrong position. It follows that the preceding objections and remarks apply with greatest force to those cottagers and labourers who occupy land chiefly as their sole stay, and have little or no resources elsewhere to depend upon; but as objections have been raised to the plan even under its best form, it is necessary that I should take a short review of them before proceeding further.

1st. It is objected to by some, on account of the difficulty it throws in the way of identifying or discovering stolen corn, &c., the owner of the allotment having always an opportunity, it is said, of shielding himself by a reference to his own produce; for if he had no land, say the objectors, he could have no corn, &c., upon his premises. This objection is the one most generally urged against allotments by the farmers in the eastern counties of England; and although there may be some foundation for the hinderance it causes in detecting cases of theft, it is, after all, a most frivolous idea. In the present state of affairs, *nothing whatever is an unmixed good*: allotments, like other things, have their inconveniences; and I am bound to say that the objection referred to applies more or less to everything else. It proceeds, in the first place,

on the ungracious assumption that the holders of allotments are guilty of the crime of stealing. Now, I have asked many large farmers in this neighbourhood of allotments, if they could recollect any case of a holder being charged or convicted of such a crime, and I have been answered in the negative. I have myself lived for the last seven years in the midst of those men, and not a single instance of this sort has reached my ears. Mr. Hammond of Cranworth, in his evidence before the Assistant Poor Law Commissioner, says, "I do not recollect an instance of a holder of an allotment having been brought to trial for any crime; and I know strong cases of reformation arising from the possession of them." Mr. Moseley of Glenham, Suffolk, observes that "allotments induce *honesty*, civility, and industry." Mr. Fisher of Hevingham informs me that he has watched the operation and effect of the numerous allotments in his parish, and he has no hesitation in stating that "they have completely changed the character of the labourer, for he is now *honest* and respectable." Such were the good effects of two or three allotments on as many poor men in the parish of Runton, that the proprietor, Sir Edward North Buxton, is now taking steps to spread this "lure to *honesty* and sobriety" amongst all the labouring population there. But even supposing that a few of the holders are dishonest, as they no doubt may be, and suppose further that all those dishonest men were dismissed from their small holdings, would they not accomplish the end so much dreaded, if they made a *bonâ fide* purchase of a small quantity of wheat, barley, or potatoes, as a cloak for their dishonest purposes? What can the difference be in appearance between wheat that is purchased and that which is reared on their own land? None whatever. But, in order to place the objection in its true light, let us apply it to other things. The grocer and tea dealer must be strangely at a loss to find up any of their stolen goods, for similar articles are to be found in most of the houses of Britain; and the drapers must be in a like predicament, for their goods are worn by every inhabitant of this country. Millers, bakers, and all who deal in articles of domestic consumption, seem to be exposed to the same annoyance; and I really cannot think of anything, or any one, exempt from the common evil.

Though not so often insisted upon, a more reasonable charge against the small holdings is, that the labourer is apt to spend too much of his strength upon them early in the morning before he goes to his regular employment. His working for himself, too, at night, is sometimes found fault with, his employer deeming a cessation from labour necessary to renovate

the energies of the mind and body. *There is* a danger of this sort, and no species of argument is sufficient to gainsay the fact; but the evil, be it remembered, is by no means inherent in the system itself, but in an unwise distribution of the land. As already stated, half an acre is in general found to be quite sufficient for a man to work during "fore" and after hours and "bad" days; but the extent of land should, of course, be apportioned according to the holder's family, for the younger branches of it, if numerous, can, with the parents' assistance and guidance, cultivate even to the extent of three quarters, or a full acre. If it should so happen that a man entangle himself with more allotment land than he can conveniently manage, he is just in the condition that some farmers are in, when they grasp at more space than they have capital to work; only the poor allotment man has this important additional restraint upon him, that if a master should find the servant neglecting his employer's interest, a speedy dismissal will be the result. Something, I think, might be said in favour of occasional, and even regular, employment, for the poor man, after his usual day's labour is over, especially as such labour is free and unconstrained, and in the society, it may be, of his family; for I do not think the energies, either of mind or body, are likely to be affected by it so much as a debauch in the ale-house would occasion; but I am content to leave the question open, admitting that the privilege may, in some cases, be abused. At the same time I must state, that since a man can, with the aid of his allotment, feed and clothe himself in a manner superior to the person who has no allotment, I am confident the former is more able to perform a good day's work; *a fact which is almost always left out of view.*

With a certain class of persons, an objection is held to allotments because they enable the holders to get into debt with the tradesmen in the neighbourhood. This is a mere piece of fancy, and forms a very unwise objection, for the circumstance might with some reason be used *in favour* of the system. Everything which tends to raise a man's character and stability in the estimation of the public might, in like way, be pronounced as the cause of his being trusted to a greater extent than he would otherwise be; and surely a person who has something else than his labour as a security for his debts, is a better customer than he who has no additional guarantee to offer. The objection would have some weight were allotments proved to be prejudicial to a labouring man; but this position no one attempts to establish. From all the enquiries I have made, coupled with long experience, I am quite convinced that the charge is made

without the slightest foundation; the answers I have universally received from tradesmen of villages being to the effect that they are always regularly paid, and that they do not see how the agricultural labourers should pay them so punctually, *were it not for the allotments.*

I conclude this paper with an anxious wish to impress most particularly on the minds of those who may read it, that whilst the "Allotment System," as a comprehensive measure, including everything in the shape of ground being parcelled out to labourers, is open, and most justly, to objection—the restricted measure here advocated, so far as I know, has been attended in every instance with eminent success. It appears that the eastern counties of England present the most numerous, as well as the most successful, groups of these allotments; and for the guidance of those who may feel desirous of introducing them, I shall recapitulate the chief points on which their success depends:—

All legislative interference should if possible be resisted; for I find that any plan of managing allotments which loses its *individuality* has not been so successful as those cases in which the owner takes a direct and sole interest in the working of the system. The very garb of officialism is offensive to the poor labourers, and, therefore, I urge its becoming a private *household matter*, emanating from individuals as a duty which they owe to their fellow creatures.

The land should, if possible, be good—not less than a quarter of an acre, and, as a general rule, half an acre in extent. It should be near to the labourer's house. When the land is away from his cottage, he has often to go forth single-handed; but when at home, his wife and children assist him, and he works better and is happier in their society. An allotment at a distance is infinitely better than to have none at all. The rent should be moderate, such as a farmer would pay for the land. It is cruel to take advantage of the anxiety which labourers have for allotments. The land should not in any case be let free of rates. When labourers have to pay their share, there is a constant revision going on amongst them as to who is, and who is not, entitled to relief: any misapplication of the poor's money is consequently detected and exposed. Besides, there is a pardonable importance which the paying of rates gives to labourers; and when they feel this, I believe it makes them strive to become independent for ever of the workhouse. The keeping of a pig should be encouraged, and, if necessary, money advanced the first year to buy one. If a liquid-manure tank follow, that labourer may be pronounced beyond the reach of the Union House. No

fruit trees or bushes should be planted on allotments: their shade is hurtful, and boys trespass after the fruit, and damage the crops. Strict supervision is indispensable; but if it can be avoided, it is better not to delegate the charge to stewards: many of them are harsh and ill-natured to poor labourers: on the other hand, it is the distinguishing glory of our aristocracy in general, that they treat the poor with kindness.

The scheme of Allotments I thus leave, strongly recommended as it has been in every page I have written. It has been urged as a moral and social agent in reclaiming bad men; as an excellent means for the relief of poverty; and as the best school for the rising generation belonging to country labourers. Let it only be adopted, and I have the fullest hopes that the song of industry and virtue, now unhappily lost, may yet be heard throughout the Agricultural districts of England.

Finally, I feel happy in thus having had an opportunity of recording the many blessings

the system has been the means of conferring both on the holders, and on the families to which they belong; yet I must add that I cannot state an instance in which success has not been the consequence of diligence and sobriety. Amongst industrious people, allotments will continue to do great things; but they will not save the idler, so long as he continues as such, from the disgraceful situation which awaits him in society. They will not interfere, I am happy to say, to feed and clothe the sluggard, or support the drunkard, or administer in any way to the immoral man. They will, it is true, offer them every advantage consequent upon a change of life; but if the offer should not be closed with, they will assuredly throw out such men, casting them deeper in the mire than ever. Is it not enough that they come to the help of the man of industry, providing him with almost all that he need care for, and enabling him to close his labours in life amidst comfortable circumstances?

JAMES GRIGOR, *Norwich.*

GARDENING CALENDAR FOR OCTOBER.

THE CONSERVATORY.

DURING this month fires will probably be sometimes necessary, to a greater or less extent, according to the state of the weather. Keep up an average temperature of 50 degs.; it will, however, be considerably above this in the daytime, when there is sun. Ventilation must now be brought to the winter standard. When the weather is fine it may be indulged in pretty freely, choosing the mornings for opening the house, and shutting up early in the afternoon, so as to raise the heat a little, by enclosing some of the sun's rays. When the weather, on the contrary, is stormy or unfavourable, very little air—sometimes none—should be given, except just in the middle of the day. If this plan is followed out, it will do away with much of the necessity of commencing to employ fires too early, which is an evil. The atmosphere must be kept tolerably dry, by avoiding the use of too much moisture about the house.

Watering.—The supply of water, both to the roots and to the atmosphere, must be diminished, though not to an extent that would subject the plants to injury from drought. No water should be applied to the plants at this season of the year, except during the morning, so that the extraneous moisture may dry up before night. Towards the end of the month this will probably become very important.

Climbers.—Those intended for early flowering plants next year should be pruned, if it was not done in September.

Tea-scented Roses.—The plants that have been preparing for removal here, should now be coming into flower, and will serve as very desirable objects of ornament for some time to come. Indeed, by retarding some of these plants, and attending to get the forced ones on early, the conservatory should not be without roses, till they are plentiful in the open air.

Forced Flowers.—The plants that have been brought forward in the forcing-house will require to be very carefully managed, in consequence of their tender nature, and the season—every day becoming more unfavourable for tender plants. In taking them from one house to the other, great care is necessary to avoid exposing them to the open air; if they are moved openly it should only be when the air is mild; at all other times they should be carried under cover or protection of some kind. A hand-barrow, or basket fitted with light frame-work, and covered with transparent calico, would be very useful for this purpose, for some five or six months of the winter season. Much of the gaiety of the conservatory, for the next three or four months, will depend on a good supply of flowers, artificially prepared for this purpose. Some will have to be forced, such as the Dutch bulbs—Hyacinths,

Narcissus, &c., and some shrubs, as Roses, Lilacs, &c., together with such green-house plants as Camellias, Azaleas, &c.: others will have been retarded beyond their ordinary flowering period, by removing all the flowers during summer, up to a particular period in the autumn proper for securing them in succession; such as these are Salvias, Calceolarias, and similar green-house plants: another class of plants will not have been retarded, but raised, and contrived so as to come into flower at this season; these will be the late propagated Pelargoniums, the Chrysanthemums, &c. All these plants, when in flower, must have the best situation the conservatory offers; they must have all the light that can be secured, and while they are duly watered, all symptoms of dampness and decay must be guarded against; and when the plants have done blooming, if they are valued for another season, they must be protected throughout the winter—and well-treated too, in the particular structures congenial to their nature.

THE GREEN-HOUSE.

This is the intermediate period between the excitement of summer influences and the dreariness and torpor of winter, and plants are not insensible to this changed state of things. As no growth can be perfect and complete, except when made under the full influence of light, to enable the elaborating functions to perform their office, so it must be evident that with the now diminished light, the less growth that plants are allowed to make, between the present time and next spring, the better for them, so far as the ultimate vigour of their constitution is concerned. The treatment adopted, therefore, must be such as to favour the maturing of the growth already made, rather than the exciting of any fresh growth. This applies equally to plants of all kinds, excepting those which are intended to flower out of their natural season; and obviously condemns the practice of setting plants so close together as to crowd each other in any way. Early in the month green-house plants of all kinds must be so placed that protection may be afforded them, should it prove to be necessary.

Routine matters.—There are some few matters worth mentioning, that apply equally in every place, and may, therefore, be noticed here, to prevent repetition. The removal of all dead or decaying leaves, is one of these; this requires constant attention, and though apparently simple as it may appear, it should be carefully done; it is better to pick off the leaf, leaving the base of the footstalk untouched, rather than to remove it close to the stem, by which the latter is liable to become injured.

Then, again, every two or three weeks, the surface of the soil in the pots should be carefully stirred up; if it be overgrown with moss, or appears exhausted, remove it, an inch or so in depth, and replace by some fresh soil *of the same nature*; if it does not require this, it should be stirred up, and then neatly levelled. This attention, together with the proper arranging of the plants, should be looked to as soon as possible after they are set in the house, and must not be neglected throughout the winter. Cleanliness, in every particular too, should be unremittingly persevered in.

HOUSE FOR MISCELLANEOUS PLANTS.—*Temperature, &c.*—When the plants are first brought into the house, it is important that they are not too much crowded together, and also that they are allowed plenty of air. Indeed, if the weather is at all mild, the ventilators should be allowed to stand open night and day, closing them only—and that partially or entirely, according to circumstances—during cold nights, and in intervals of cold, rough weather. A good average temperature for green-house plants is 45 degs. by day, and it may be as low as 35 degs. at night, without injury to the plants, unless they include some of those which are of a tender nature. The temperature of a green-house, however, is very fluctuating, because it is desirable to secure free ventilation as often as possible; and in these cases, the temperature will necessarily vary according to the external weather; besides, except some particular object is in view, these fluctuations are of very little importance, so that the frost is fairly excluded, and the temperature does not far exceed the maximum of 50 degs. At night the temperature should never be over 40 degs. In watering the plants no more ought to be given them than is just sufficient to keep them from becoming dry; in fact, the plants should be placed on short allowance, the object being to prevent, as far as possible the development of additional growth, and at the same time to maintain that which is produced in as healthy a state as possible. Cold water should never be used; it should always be as warm as the house, and if it be not rain water, should have been for some hours exposed to the atmosphere.

Primulas.—Pot on a few in succession into six-inch pots, being very particular to drain them efficiently.

Cacti, and other *Succulent plants*, should be kept rather more stringently dry than other plants, though this should not be carried so far as to cause them to shrivel up. When they are at rest, it is very essential that the atmosphere around them should be kept clear of all stagnant or accumulated dampness.

Chrysanthemums.—Let these have as much light and air as possible while they are ex-

panding their flowers, in order that the colours may come clear and bright. Let them be kept well watered, so that the leaves may remain fresh and green; weak manure water applied in a clear state is an important assistant in effecting this; it may be used alternately with clean water. The plants should now all be got under cover.

Cyclamens.—If any of the plants are showing signs of growth, let them be re-potted, using a mixture of half peat and half sandy loam, both in a rough state. Bulbs three inches across will not require a larger pot than the size which is six inches in diameter. These plants which are thus naturally commencing to grow, are those which should be accelerated by a little heat; they should therefore be removed to the cool part of a stove or forcing-house.

Dutch Bulbs intended for forcing, ought to be secured and potted, not later than the early part of this month.

Cestrum aurantiacum is a good plant for winter-flowering, and if not possessed should be added to the collection. It will be gay with bunches of orange-coloured flowers for a considerable period during the autumn and winter; and these are succeeded by showy white berries.

HEATH HOUSE. — *Temperature, &c.*—During all mild weather, night and day, this house should stand open as far as possible, so that there may be free ventilation. The day temperature is certain to be high enough for the plants; and at night they only require to be just secure against frost. The plants kept in this house suffer irreparably from drought; care must therefore be taken that they are supplied with water, so as to keep them just thoroughly moistened; an over supply at this season produces consequences almost as much to be avoided as those resulting from drought.

Seeds of *Ericas* may now be sown in pots of sandy peat soil, and the pots placed on the shelves of the house; they ought to stand two years before they are destroyed, as plants will generally continue to make their appearance during that time.

Arranging the Plants.—As regards the space to be allowed for each plant, no rule can be set down; it is however above all things erroneous to let them be crowded or close together, either now or in the growing season; at the latter period, free space is necessary in order that the growth of the plants may be unimpeded by the shade, either lateral or vertical, of crowding plants; at the former period, it is no less necessary to keep the growth already made in a healthy condition. The choicest and most delicate plants should be placed in the best situations,

that is, chiefly where they will get most light, and the purest and freest air, avoiding draughts however. The front platform generally offers these advantages; and small plants usually become its chief occupants; larger specimens of rarity or value being placed at intervals among them. Plants in bloom are also set in prominent positions of this kind, so as to produce as much effect as possible in an ornamental point of view. The larger plants occupying the principal part of the house are not to be placed so as to form an even, uniform bank of foliage; some of the choicer plants should stand out prominently, by being elevated above the rest, on small blocks or inverted pots. It is, moreover, preferable to keep the plants of each particular kind as near together as possible, and not allow them to be placed in heterogeneous mixture; this acts as an almost certain check on formality of arrangement, which should at all times be avoided.

Azaleas.—Towards the end of the month, a plant or two of the earliest bloomed of the varieties of Indian Azalea, and in which a fullness or plumpness of the buds is to be observed, may be taken to the cool end of the plant stove, or to the flower-forcing house, where they may be subjected to a temperature of from sixty degs. to seventy degs.; this will accelerate their development, and, if they are not too rapidly excited, they will bloom nicely during the winter, when they will, no doubt, be welcome objects.

CAMELLIA-HOUSE. — *Temperature, &c.*—Keep the day temperature of this house about 45 degs., and the night temperature considerably lower. Allow free ventilation daily, and also at night if the weather be mild. The plants require to be just, evenly, and regularly moistened; but, being in a comparatively inactive state, they will not require so much water to effect this as formerly.

Camellias.—Attend to the preparing of a few plants in succession for the forcing-house, by placing them in the warmest part of this structure previous to their removal. Neglect in watering Camellias—whether too much or too little is applied—is perhaps less easily remedied than with most plants, as their growth is slow and permanent; therefore be *very particular* to have them properly attended to in this respect.

Orange trees, Myrtles, and similar plants, should be top dressed, cleaned, and set in order for the winter. See that the drainage of these is perfect and efficient.

PELARGONIUM-HOUSE.—*Temperature, &c.*—Perhaps there is no department of the green-house which requires such close attention during the winter season, as the Pelargonium-house; this is in consequence of many

of the plants being much more in a growing state than others. *Pelargoniums* and *Calceolarias*, for example, should progress, though more slowly now than during more genial seasons; and the plants, too, are more impatient of cold, and consequently require more particular attention to guard them against frost. The temperature of the house need not, however, be kept very high; an average of 45 degs. by day, and 40 degs. at night is quite high enough by any artificial contrivance in regulating the airing. Fires will be unnecessary yet. Air should be freely admitted if the weather is mild; if rough and boisterous, less freely, but still to some extent, and that as fully as circumstances will allow, on the calm side of the house. Persons are generally far too much afraid of ventilating their houses as winter approaches, but it is bad policy to refrain from doing so, to the full extent which the circumstances in each case will allow. In respect to watering, the plants in this house require just the attention we have so often explained as suitable for growing plants, to be watered so much as to keep them just moderately and evenly moistened. Being rather juicy plants, it is perhaps as well to keep them a little short, but this must not be carried so far as to cause any material check, which would be injurious to their blooming.

Pelargoniums.—The old plants will have been all cut down, and repotted as previously explained; and they should now form nice stocky plants, with active roots, and young shoots in various stages of development: these should be thinned and topped according to circumstances, so as to give the young shoots room to grow, and cause them to branch out in a bushy manner. The forwardest may be potted into larger pots, using a rough compost of rather sandy loam and leaf-mould; and the lowermost shoots should be tied out, or rather downwards, so as to bring them into a position to grow over the edges of the pot as they advance in size: the neatest way of fixing them is to pass a band of bass matting (or wire) just under the rim of the pot, and pull the shoots down towards this, as low as they will bear to be pulled, by fine strands of bass matting. This is much neater than using stakes; besides, every shoot can be tied exactly in its required position, while the tie is hardly to be seen. Cuttings that are well furnished with roots may be potted into separate pots, early in the month. See p. 405 in respect to the autumn and winter flowering plants.

Scarlet Pelargoniums planted out in the open ground, and any other plants of similar habit, which it is desired to take up and pot, for preserving through the winter, should be attended before they are at all affected by

frost; they ought, therefore, to have attention early in the month. Take them up whole, and as carefully as possible; by no means prune them; after potting, place them in a cold frame, and keep the frame close, and shade, and sprinkle the plants frequently with water, till they will bear exposure to the sun. When they are established, they may be placed in any corner of the *Pelargonium*-house for the winter, and simply require to be kept *very moderately* supplied with water, and to have the leaves removed as they decay.

Calceolarias.—If a sufficient number of plants has not been secured, the earlier parts of the month may be made available for putting in additional cuttings, which soon root if planted in spongy soil, mixed with sand, and placed in a mild hotbed; pot them off when rooted. The plants previously raised must be shifted into larger pots, and seedlings should be encouraged.

Fuchsias.—Those taken up from the border and potted, should be treated in the same way as the *Scarlet Pelargoniums* just referred to; and those also which have been grown in pots may be similarly treated, so far as their winter preservation is concerned.

Tropæolums, if they have started into growth, should be carefully potted, and receive every encouragement the season of the year will admit of in extending their growth. If they can be kept from growing till the spring, it will be so much the better; but after they have started, it is folly to attempt to check them.

Cinerarias.—Shift on successions of these useful plants, and let them be carefully watered.

Insects.—All the plants grown here are liable to be attacked by the aphides (green-fly, or plant-louse); as soon as ever they are perceived, the remedy of fumigation must be resorted to.

THE PLANT STOVE.

One business connected with the present season is the proper arrangement of the plants. In this house, besides what was said under the head *Heath-house* in reference to giving the lightest and most favourable situations to the choicest plants, and not crowding them one on the other, there is here the additional consideration of locating the tenderest subjects at the warmest end of the house, if, as usually happens, one end is warmer than the other. The stirring and renewing of the surface soil, also previously noticed, equally require attention in the management of stove plants. The general features of a gradual change of treatment, adopted in order to bring the plants to the regimen of winter management from the more liberal treatment of summer, as already noticed

at p. 442, must be adhered to. Additional growth—to any extent at least—must be prevented, and the process of maturing the previous growth assisted by a comparatively dry atmosphere and the diminished appliance of water.

Temperature, &c.—A maximum temperature of 70 degs. by day, and 60 degs. by night, may be allowed; but the temperature ought not to be permitted to fall below 60 degs. by day, and 50 degs. by night; the average mean between these points, or a little higher perhaps, will generally be sufficient. It is not desirable to decline from the summer temperature too rapidly; it should be done gradually, so that while the declension is going on, there may yet be heat enough to assist in maturing and ripening the growth of the plants. As regards ventilation, it may be taken as a rule that more or less fresh air should be admitted daily: whenever the internal temperature is higher than the maximum point already named—as it will sometimes, perhaps often, be, from the influence of the sun—admit sufficient air to prevent its rising many degrees beyond that point; on the other hand, if the temperature is low, and but little can be admitted, still admit that little, so that the temperature does not fall below the minimum. Shading may be altogether discontinued for the season. Moisture in the atmosphere must now be limited.

Watering.—In watering the growing plants, bear in mind what has been already said on this subject; let it be applied in the morning; the torpid ones should get no water, and those which are partially so, very little indeed.

Oleanders.—Another set of cuttings planted now, and managed as intimated at p. 406, will make nice small blooming plants by next autumn.

Epiphyllum truncatum.—Some plants of this very beautiful Cactus should be taken into heat now, to cause them to throw out their flower buds, which, when developed, make a fine display. The plants should be taken in in rotation, at short intervals, and will then furnish a succession of bloom.

Winter Plants.—The plants of *Aphelandra*, *Justicia*, and others, provided for blooming in winter, must be looked to: if they are likely now to want larger pots, let them be repotted early in the month. Water them carefully—that is, do not apply too much; and give them the advantage of a good situation.

Schubertia graveolens, a handsome white-flowered climber, suitable for pots, should now be potted for winter flowering; young, vigorous plants should be selected.

Gloxinias, *Gesneras*, *Achimenes*, and similar plants, which are past the flowering state, should be brought to a state of repose

by gradually withholding water. *Achimenes* and *Gesneras* may be dried off completely, and some persons treat *Gloxinias* in the same way; but it is generally thought better not to dry them completely.

Clerodendrons, and other free-growing plants that have been in large pots, should be transferred to smaller ones, to stand the winter.

Euphorbia fulgens should be kept rather dry for a month or so, to accelerate its subsequent flowering.

ORCHIDACEOUS HOUSE.

Many showy kinds will yet be in a blooming state, so that the house will provide a scene of gaiety, now that other flowers are getting more rare than hitherto. The practice of removing plants that have completed their growth to a cooler and drier atmosphere, must be followed up as occasions offer.

Temperature, &c.—Some decline must be observed in the temperature corresponding to the advance of the season. A mean heat of 70 degs. by day, and 60 degs. at night, for the warmer house, and 5 or 8 degs. lower for the cool house, will be proper, allowing the decline of heat however to be gradual,—not sudden. Atmospheric moisture in the former case must be slightly, and in the latter materially, reduced. Very little ventilation is necessary for some months to come; still when mild intervals occur, it may be well to admit a slight amount of fresh air. Shading may be entirely dispensed with for the season.

Potting.—Where any of the plants have lately gone out of bloom, they may be repotted if necessary, or the material about their roots may be removed if they are in baskets or on blocks: if this is carefully done now, they will be ready to start into growth at the proper season. Such plants must be kept comparatively dry.

Resting the Plants.—There is one point of treatment connected with the removal of the plants to a lower temperature (whether fresh potted or otherwise) that requires notice; it is this:—if the soil, when they are so removed, is considerably charged with moisture, or is allowed either to become or remain so, while they are in this resting state, the probable consequence is, that the plants, at least the roots, will rot off, and be destroyed. It is therefore necessary to see that the soil is comparatively—not excessively—dry, previously to their being removed. This entirely obviates the evil in question.

Growing Plants.—Any plants that may have commenced growing, should be kept in the most favourable positions as regards heat and light: it is also a good plan to look to top-

dressing them, and renewing the surface soil, if this is at all requisite. Plants in this state must be kept moderately moistened.

Zygopetalums.—When these plants commence their growth, which generally happens about this season of the year, they should be repotted, into pots of suitable size, three-parts filled with potsherds, and the remainder coarse peat raised two inches or so above the pot. They must be kept in a moist growing temperature.

Epidendrums, *Brassias*, and *Maxillarias*, of various kinds, will probably be in the same state as the *Zygopetalums*; and in that case require to be similarly treated.

Insects.—The time that is now unoccupied by pursuits so pressing and varied as those which present themselves during summer, may be usefully employed in examining the plants, and destroying any insects that may infest them, particularly those of the coccus family, which soon render the plants filthy if not removed; various mixtures and washes are recommended for this purpose, but there is nothing better than clean water, a sponge, and a little care and patience.

FORCING-HOUSE FOR FLOWERS.

Temperature, &c.—Where flower-forcing is carried on to any extent, the house is required to be in regular work by the middle or end of this month at the latest, and therefore the internal conditions of the atmosphere must be steadily and regularly maintained. When the house is first closed, so to speak, sufficient ventilation must be maintained to keep the temperature but very little raised above the external air, the minimum being about 50 degs. by night, and 60 degs. by day: all sudden transitions must be carefully avoided, as well as cold draughts of air.

Watering.—This operation should be attended to regularly, the quantity being regulated by the requirements of each individual plant: take care that none become soddened in their pots, on account of the retentive nature of the soil, whether natural or artificial; and on the other hand, be equally careful that by porosity of soil, or by the drying of the earth, the water does not escape from the pot, without thoroughly soaking the soil. The atmosphere of the house should also be kept moist, by keeping the paths wet.

Roses.—Towards the end of the month, a quantity of these should be introduced, so as to have them in bloom about Christmas. Examine the state of their roots, especially as to any danger of the earth becoming soddened. Clean the pots and surface of the mould, and also prune them if they require it; but they ought to have been got into shape by the summer pruning, so as to be now well furnished

with fine plump buds, on short shoots. The Chinese Roses will be blooming freely in the pits, and will need little or no house treatment yet.

Pelargoniums.—Those cut down and grown in pits for early forcing, should receive their final shift in the beginning of the month, and be placed in the green-house until wanted to force. Use a rich loamy soil, and moderate-sized pots, being guided in this by the situations they will be required to decorate eventually. For these purposes a considerable number in small pots is very often handy for filling baskets, and vases, where plants in large pots would make a very poor show.

Hyacinths.—Some of these treated as formerly advised, will be found rooted sufficiently by the end of the month, to be taken into the house. They should be forced very gradually, or they will draw up very weak. About the same time a fresh lot should be potted, and treated as before stated.

Narcissus.—These should receive just the same treatment as the last. Both require a considerable supply of water, but care must be taken that it does not stagnate about them, or the roots will speedily rot.

Tulips.—The Tournesol and Van Thol tulips, both the single and double varieties of each, may be included as requiring the same treatment as the two last.

Crocuses and *Snowdrops*.—These must also be similarly treated, recollecting to pot them very thick, the bulbs touching each other, or they will hardly make sufficient show to reward the trouble taken with them.

Lilacs, and other hardy shrubs, should be introduced, and forced slowly at first, or as the cold dull weather comes on, their flowers are apt to perish without expanding.

American plants.—The same remarks apply here. Be certain that the ball of roots is thoroughly moist all through, or the flowers will fall without expanding, and the plant will also most probably perish.

Hydrangeas.—A few of these may be put in, and kept well watered. When once in good growth they require a pan under them, which should seldom be without water.

Lily of the Valley, if introduced, should be kept in the coolest part of the house, and be brought forward very slowly, as it is very apt to come blind, especially if the plants are recently potted.

PITS AND FRAMES.

Almost all green-house plants may be kept in frames during the winter, if they are properly prepared for their reception, and are efficiently protected during frosty weather; but if there is green-house room, it is more advantageous to have only a few duplicates of the

hardier kinds so circumstanced, as the remainder of this kind of accommodation may be more usefully employed in sheltering half-hardy plants of various kinds. As there is considerable inconvenience attending extensive removals of plants when the winter is much advanced, it is better to get these things all properly arranged for the winter, as soon after this time as circumstances will allow.

Half-hardy plants.—Such of these as it may be intended to keep in the pit during winter, and all but the most tender may be so kept, should be well attended, especially during the earlier part of winter. They require great attention, so that they do not get too much water, which would cause them to damp off, as the technical phrase is, that is, the entire plant or portions of it would rot away or decay, and become mouldy, and this when once commenced would spread rapidly throughout the whole of the plants. Another cause which produces this effect, is keeping the plants closely shut up in a damp confined atmosphere; and to avoid this, no more water than is necessary should be used inside the frames, and as much air as possible should be allowed; indeed, whenever the weather is at all mild and dry, the plants should be fully exposed, and at all other times, except during severe frost, more or less air should be admitted. Whenever it was found to be necessary to have the pits nearly or quite closed, a few lumps of unslacked lime placed so as not to come in contact with the plants, would serve to abstract a portion of moisture from the atmosphere, and thus render it drier. If the plants get mouldy, a little slacked lime in powder may be scattered over them.

Alpine plants should be plunged in dry coal ashes, tan, old sawdust, or some such loose material, to keep the frost from the roots; and a situation should be chosen for them where they may be protected from rain and severe frost by wooden shutters, thatched covers, or other convenient modes.

Neapolitan Violets.—If these plants are not potted, and placed in the front of the green-house, a bed should be made up for a one-light box, in which the plants may be successfully preserved by a little care. The bed may be built up two feet high of faggot-wood stacked closely, on which a foot thick of short half decayed dryish litter may be spread, sloping considerably from the back to the front: the frame is then to be set on, and if the plants are in pots, which is the best plan, it may be filled with dry plunging material, sufficient to raise the pots when plunged within a foot of the glass. If the plants are not in pots, the frame must be filled up with dryish sandy soil, and the plants planted just clear of one another. They require as much

air as can be given them, and to be guarded from rain, or dampness of any kind, more than enough to keep the soil just evenly moist.

Orchises.—Most of the British Orchids, if the roots are obtained with care, and potted, may be forced like Hyacinths, and would form a very pretty variety among forced flowers.

THE ROSE GARDEN.

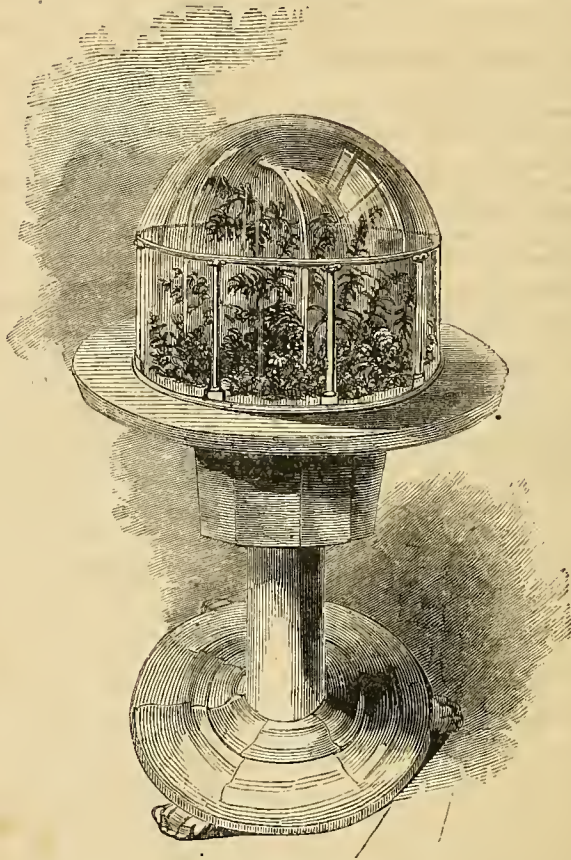
In this month, if the weather be mild, there are many straggling beauties to be found in a large collection; what with the Perpetuals which in mild weather will be found blooming occasionally till Christmas, and the China kinds, which continue blooming as long as they grow, there is sure to be plenty of flowers. Some of the summer roses will have begun to lose their leaves if the weather be cold, and towards the end of the month some steps should be taken towards procuring stocks. If you have to collect them yourself, you should be looking out for them, but there are plenty of persons who make a business of it, and you should give your orders so that you may look to be furnished pretty soon. In some seasons there are plenty to be had by the end of this month; in others they are not ripe enough. If you obtain any, trim off all side branches, prune the roots by cutting all the bruised ends smooth, and sawing off any straggling lumps of the woody portion so as to induce the formation of new and better roots. Then plant them in rows eighteen inches apart, and three feet from row to row; let there be stakes driven four feet six inches apart on the same line as the stocks, and fasten rods of some kind from one to the other two feet from the ground, and also near the tops; to these rods all the stocks should be fastened, both at the bottom row and the top, so that the wind cannot disturb the roots. Each row should have the stocks pretty nearly of a height, three feet stocks in one row and four feet stocks in another, and so on, both for appearance, and for the sake of applying the same amount of support to keep them from mischief by the wind; whereas if tall ones and short ones were in the same row, there would be required different heights of stakes and rods. The seedling roses must be kept clear of weeds: the budded ones must be examined as other budded roses are, and it may not be too late to bud some of the China and Noisette kinds on China stocks, if there be any good enough to be worth propagating, or proving singular in the foliage to be worth hastening by that process. Any of the seedlings that have been budded and bloomed must be either condemned and thrown away, or adopted and propagated. Not only must those which are on the stocks be saved, but the original plant from which the variety was

produced. Look over all the seedlings, and cut out all the thin spindley shoots, leaving the strong branches the full length to go through the winter at any rate, for it will be quite soon enough to prune the principal branches in the spring. If it be a dry month it will be necessary to water all planted-out young roses; the larger ones being established, will take their chance,—indeed their roots will be far out of the influence of wet and dry, but the seedlings and young plants in or out of pots will be found with but shallow roots, and fibres near the surface, requiring occasional refreshing with water, or they would

flag. If any of them have smooth bark and are like the China roses in habit, they will be better in pots of rich mould and under the protection of a cold frame, because they may keep growing all the winter and perhaps bloom before the spring. Look well to former directions.

WINDOW GARDENING.

The interior alone must not now be looked to for flowers. If there is a green-house, a plant or two from time to time may be taken from thence; or if there is not this convenience, the flower market must be resorted to. Occasion-



ally some of the *Geraniums* or *Fuchsias*, that have been blooming during the summer outside, will not be out of bloom, and in this case they may be removed inside until their bloom is past. They must have all the light possible, and be regularly, but only moderately, watered.

PLANT-VASES.—In addition to Moss-vases, which have been already recommended as very interesting objects for the winter, some of larger dimensions, of which the annexed is an example, might be provided for growing some of the smaller and more beautiful of the

Ferns, either native or exotic. The engraving represents a flat table about two feet six inches or three feet wide, below the level of which provision is made for the roots, and on which an ornamental dome like glass, two feet in diameter, is placed for the purpose of protecting the other parts of the plants.

Geraniums, and other similar plants which it is desired to preserve through the winter, must be kept inside at night, and exposed only in fine weather during the day. When they are taken in, manage to give them suffi-

cient air, so that the transition from exposure to confinement is not too sudden. At all times when the weather will permit they will require air, and when it is too cold or wet to place them outside they may get a little by opening the window. Do not cut them at this season; only remove the decayed leaves as soon as they are turned yellow all over. Keep them moderately dry.

Fuchsias require to be got rather dry when the flowering is over: they will lose most of their leaves, and may then be set aside in any corner free from frost, for the winter.

Myrtles, and other evergreen plants requiring protection, should be set as near the windows as possible, and require to be regularly watered; but, like all other plants, they must not have too liberal a supply during the winter.

THE FLOWER GARDEN.

Alterations of flower-beds, lawns, gravel walks, shrubberies, &c, are more conveniently done at this time of the year than at any other; and the alterations now involve less interference with the planting of the various kinds of flowers than if deferred till the spring.

Anemones for early flowering should be planted during this month, in fine dry weather.

Auriculas.—These should be in their winter frames, and will now require to be occasionally watered to keep them from drooping; to have full air in mild weather, and some at all times; and to have the usual routine attention of removing dead leaves, and occasionally stirring up the soil.

Beds and Borders should be dug, and put in neat order for the winter.

Biennials sown in the summer, for flowering next year, if not planted out, may be removed early in the month; they are better transplanted now than in the spring.

Bulbs of all kinds, grown in beds in the flower garden, may be planted without delay; in fact, the sooner this is done the better.

Carnations.—The layers of these, in pots, should be set into dry cold frames for the winter, and require plenty of air whenever it can be given them, and to be very carefully watered. If any are planted in beds, let the soil be sometimes hoed in fine dry weather, and pressed about the plants.

Crocuses.—Scarcely any flower tends so much to make a garden gay in spring as these little harbingers of brighter scenes. They should be planted to a considerable extent now. Plant each colour by itself, and let them be put in rather near together in good broad patches, so as to produce some effect when in bloom, which they fall much short in doing if distributed over a larger portion of ground.

Crown Imperials.—These should be got in

some time this month if required to bloom early in the spring, as they mostly are.

Dahlias.—Protect the base of the stems and the *crown*, by laying a few inches thick of dry coal ashes, old tan, or sawdust, immediately around them: this should be done before they are injured by frost. The roots are better in the ground till next month, whether the tops are killed or not.

Edgings to walks and flower borders may be planted at any time when favourable weather offers.

Hepaticas.—Provide these for early spring blooming: they may be planted in small beds, or near the edges of the flower borders.

Hyacinths.—Get these planted in the beds for blooming in spring, as soon as favourable—that is, dry—weather offers; they may be placed six or eight inches apart, and two inches deep.

Jonquils for early blooming ought now to be planted.

Lawns.—The mowing of the lawns should not be neglected, at least once a fortnight, while the weather is genial enough to admit of the grass making much progress in growth.

Narcissus roots intended for spring flowering should at once be planted.

Pansies.—The cuttings of Pansies must be treated according to circumstances. If potted, they may be preserved in cold airy frames; and if not potted, this may be done. Others will have been—or may be, if the weather is favourable—planted out in beds, and these may be protected when cold weather sets in by sticking a few pieces of evergreen boughs among the plants.

Perennials sown during the summer may now be planted where they are required to bloom, if it be not already done. The plants in the beds and borders may be taken up and divided, if necessary, and replanted.

Picotees.—The beds of these should be hoed in fine weather, so as to keep the surface fresh; in dry weather the soil should be pressed around the plants: those in pots should be protected in airy, dry, cold frames, and very carefully watered.

Pinks.—The beds of pinks should have the surface hoed in fine weather, and the soil pressed about the plants when dry, so as to fix them firmly.

Polyanthuses and *Double Primroses* may be sheltered a little by a few loose boughs, or a little long litter, as soon as the weather becomes wintry.

Ranunculuses.—Some of these, especially the *Turbans*, for early flowering, may be planted now; they will add variety to the spring flowers.

Shrubs and Trees may be removed and planted during this month; and, in fact, any

time, when circumstances are favourable, between this time and March. Do not plant if the soil is much saturated with wet.

Snowdrops.—Beds of this pretty flower may be planted; or, in company with crocuses, it forms a pretty edging to beds of other spring flowers. They should also be freely distributed about the borders.

Spring Flowers of all kinds should be especially attended to. By far too little care is bestowed to obtain these in abundance, and thus many of the charms of a flower garden are allowed to be lost.

Tulips.—The soil of the tulip-bed should be prepared in readiness for planting the bulbs, which may be done, at six inches apart, any time at the end of this month or beginning of next, when the weather is dry, and the soil is in good condition. The offsets and small bulbs should be got in without delay. The common and early varieties, for the flower beds, should be especially thought of.

Walks.—At this time of the year the walks should be kept especially clean and well rolled, as some compensation for the waning beauty of the flower garden.

Wallflowers.—These, if not planted out in the borders where they are to bloom, should be got out without delay: the double ones are best preserved in pots in the frames till the spring, as severe frost would greatly injure them.

Winter Aconites should never be forgotten at the time of planting other bulbs.

THE KITCHEN GARDEN.

THE present is a good time to commence the winter operations, such as digging, trenching, draining, turning composts for manure, and laying in a store of soils; also collecting all the dry materials, as pea and bean straw, &c, to be used for making hurdles, &c, for protecting plants through the winter. The practice of keeping every part clean and neat must never be overlooked.

Artichokes (Globe).—Towards the end of the month some dry material, as leaves or straw litter, should be put neatly around the neck of each plant. In mild winters this is not necessary, but it is better to be provided against a severe one.

Artichokes (Jerusalem).—It is not usual to lift these; but if the ground is required, or if wet, they may be taken up and kept as potatoes, or amongst sand.

Asparagus.—Cut down the old stalks, which will now be fully ripe; they are useful, being of a dry nature, for protecting roses, &c., and should be laid away for that purpose: hoe and rake the beds, and apply a coating of rich manure.

Beans.—In a south aspect prepare the soil

for planting the first crop, which will be ready for use about May. If the ground is rich add no fresh manure, as luxuriance in any winter crop is not desirable; plant towards the end of the month. The Early Mazagan is a good sort, and can be put in rows two feet apart, and three inches in the row.

Borecole.—Still fill up any spare places with these, as they will be yet serviceable.

Brocoli.—Lay over those which are very luxuriant, this check will make them better able to meet the winter. In the early sorts break in the centre leaves upon the flower; by this means they may be kept longer and safer.

Beet.—After the middle of the month take the roots up, choosing a dry day, and use the utmost precaution not to break or bruise them in any way: the roots must remain untouched, and the leaves should be cut off about three inches from the crown. A dark cool house or a cellar will be found best adapted for their preservation, and they may be packed amongst dry sand or mould.

Cabbages.—Towards the end of the month a large planting should be made, to come in early in spring; have the ground well dug or trenched. If the ground is not very rich, dig in a quantity of manure, and if wet, form it into banks or ridges, and plant double the quantity requisite, as many are likely to go off during winter. Prick out a quantity in some sheltered spot.

Carrots.—The bulk of these may be taken up and stored as beet, but they are fresher when taken out of the ground as required.

Cauliflowers.—Those sown last month will now be ready to prick out in frames, hand-lights, and such sheltered places as beside the south wall. It is well to have a number put singly into three-inch pots, and kept in frames or cold houses, near the glass; the roots must not be allowed to get matted, or they will be apt to button. Previous to those now in use getting injured by the frost, it is well to go over and lift carefully, with a spade, all that are likely to form handsome heads, putting them in "by the heels" in a shed or frame, as close together as the prevention of damp will allow: a number of the under leaves should be first taken away, and by this means they may be kept for months: a yet more excellent way is to cover them all over in charcoal, laying them just so thin as to prevent heating.

Celery.—Choose a dry day to persevere in earthing it up: remove all those which are starting to seed.

Endive.—A successional crop may yet be planted, which will come in early in spring; give them a dry and warm situation. Continue to blanch the advanced crops; they can be put into frames or cellars and tied up; or the plants, where they grow, may be covered

with any dry material, as leaves, or with a pot, pan or piece of board.

Lettuce.—Plant out under hand-lights or frames, or along the bottom of the south wall, where these cannot be had: if the soil is damp form artificial banks. Plant six inches apart.

Mushrooms.—The beds should be kept at about 55 degs., which is quite warm enough; and this may be attained by having the dung, which is in preparation for the next bed, in the same house.

Onions.—Attend to the cleaning of those stored; and often run the hoe through the winter crop.

Parsley.—It is well to have a few roots put in pots as a reserve to fall back upon, should the weather prove severe, and cut off the out-door crops.

Parsnips.—Treat as carrots, if taken up now; but they keep better in the ground.

Peas.—Sow, at the end of the month, on a warm border, or what is better, along the bottom of the south wall: the Prince Albert and Early Frame are good sorts; place near them, at the same time, a number of mouse-traps.

Red Cabbages.—Select some of the best for present use, which is said to be the best time.

Radishes.—Make a sowing along by the wall side; there is a chance of their coming in well.

Salads.—Another sowing of Cress and Mustard, also the Normandy Cress will yet come in well; give them a warm situation.

Salsafy and Scorzonera.—These may now be lifted and stored as Beet.

Shallots.—Plant these on the surface, in rows about fifteen inches apart, and six inches between the bulbs: give them a soil similar to that for Onions—rich, deep, and dryish.

Spinach.—Hoe, and thin out, and the sooner the better.

Turnip-tops.—It is recommended to select a few roots now, and plant them a foot apart; the sprouts will be found useful in spring. The bulk of the common sorts may be taken up and stored.

CUCUMBER FRAMES.

Cucumbers.—When the fruiting bed is in readiness for the plants, that is, when the heat is sweetened and settled down to about 70 degs., and the soil has been placed in, and has got thoroughly warmed, the young plants may be planted out; this must be done very carefully, and so that they are about a foot from the glass. The glass must be covered at night. Give a little air daily. The temperature should average 70 degs. by day and 65 or 68 degs. at night. Put up a lining of dry litter around the bed, not to cause any additional heat as yet—for the heat of the bed, if properly made and of good materials, will

suffice yet,—but to keep the heat from passing away from the bed by its sides. Cucumber plants in hot-houses, beyond the ordinary treatment maintained in such places, require to be evenly watered. The branches or vines of the plants should be trained up the roof near the glass. Cucumbers in frames are better trained over a light flat trellis, than directly on the soil. A regular heat, with a little air daily, and moderate watering, are the principal points in the frame culture of cucumbers: the difficulty consists chiefly in maintaining the first of these, owing to the fluctuations of the weather.

THE FRUIT GARDEN.

The final gatherings of the fruit—the thorough ripening of the wood—pruning, nailing, and cleaning, are points which must be attended to, together with a suitable provision of soils for transplanting, &c.

Apples.—Attend to the fruit-room, and see that those spoiling be picked quickly out. As soon as the leaves are off the trees they may be pruned. Those trees which may be grown over with moss, may be cleaned by washing with lime and soot water.

Apricots.—Remove the leaves by degrees, and that as soon as possible; the process is most easy by drawing a broom slightly and sharply over the trees, the hands also can be made very serviceable for the same purpose; the trees will require to be gone over two or three times.

Cherries.—This is a good time for transplanting, particularly as the season has been so favourable to the perfecting of the wood.

Currants.—Those which were matted up for preserving, should be exposed and cleaned in fine days, taking care to put the covering on again. Fresh plantations may now be proceeded with, also the pruning, if the leaves are off.

Figs must be divested of all their leaves as soon as they are ripe; the pruning may be deferred until spring: they may be either covered up as they are, or unnailed and drawn together as a bundle; but this may be done next month.

Gooseberries.—Prune the bushes, and dung and dig between them.

Nectarines.—Have the trees freed from all their ripe leaves, which forwards the ripening of the wood.

Peaches.—The same treatment as Nectarines: defer pruning until spring.

Pears.—See that the different sorts as they ripen are properly gathered.

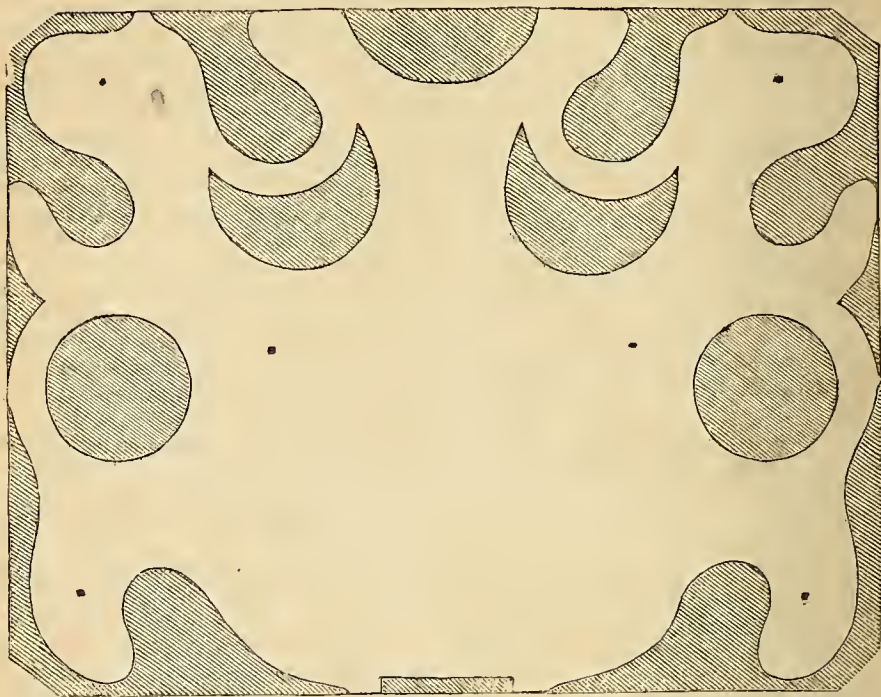
Raspberries.—Cut out all the old canes, and tie in their place four or five of the best produced this season.

Strawberries.—Those plants which were pricked out, may be taken and planted out.

Keep those in pots sheltered from heavy rains, and exposed to the sun, as it is of the utmost importance to have the buds perfected; from the beginning, strict attention should be paid to removing the runners, both from those in pots, and those planted out.

Vines.—Cut off all laterals, and shorten the shoots, particularly those parts which are crude and in an imperfect state.

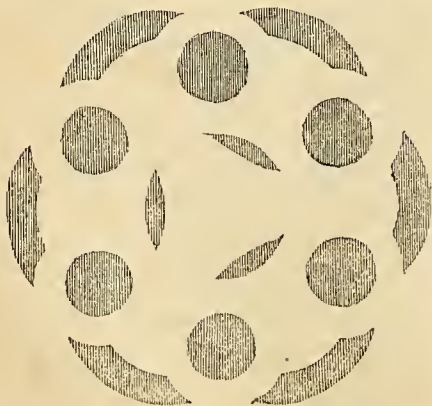
Walnuts, after being well dried, should be stored away in close boxes, and excluded, as far as possible, from changes of temperature.



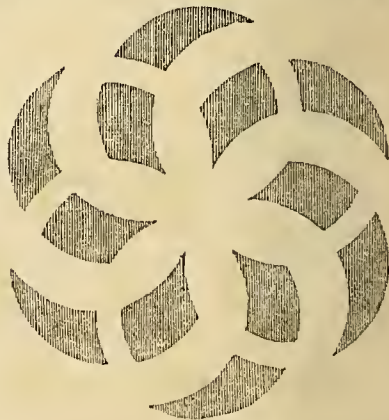
LAYING OUT GEOMETRICAL GARDENS.

IN almost all places where an attempt is made to keep up a garden, there is a portion devoted to choice dwarf flowers. In some

space is devoted to a series of beds with narrow gravel walks between, and the figure is necessarily different to any they cut on grass

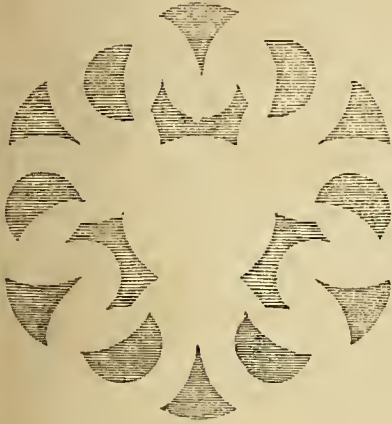


places this is done by cutting out figures on the lawn near the house. In others a small



Wherever the figure is formed on grass, the space between the beds may be wide and un

equal, but when formed of gravel it must be the same width all over. The simplest method of preserving uniformity in beds of any kind, and of obtaining various shapes, is to draw a number of circles, after the fashion of those stars and Turk's-caps which used to form the playthings of boys at school, (sometimes to ornament a kite) by first drawing a single circle with the compasses, and then drawing others around it, by first placing the point on the outer edge and drawing a second, which

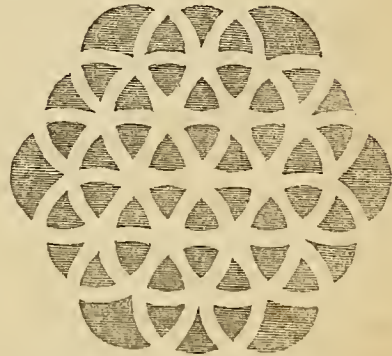


will of course cross the first circular line in two places, the point may next be placed on the spot where the lines cross, and then again on the place where the second circle crosses, and continue this until you have drawn circles round every place where the circular lines cross. This may be continued until you have drawn a third series of circles outside the second, and by the same rule of placing the point wherever the new circle crosses the old ones. If you please, you may now alter your compasses to a measure half the width of the first, and then draw a small circle within every one of the large ones; you will find the lines so intersecting each other as to make a thousand different shaped divisions, and your fancy may appropriate these in any way you please, so that you take care the beds or divisions



shall be free of each other and uniform. In short, with the papers thus marked, if you

have fifty of them you will be able to make fifty different patterns, only by filling up a different set of divisions in each pattern. In selecting these you have to take care that the beds or divisions you appropriate are connected in size with the quantity of lawn or grass left between, for beds cut on grass must not be too near, nor at all crowded. The annexed specimens of beds formed by the easy means we have mentioned would do well for lawns. They are worked out with the compasses only, and it is no bad amusement to diversify the exercise of these useful instruments for the express purpose of bringing out new forms. For instance, by making half circles from some points, to bring out a series of novel clumps, and by working the compasses along a line so as to make an elongated figure, the design may be greatly varied. This enables us to bring out the accompanying oblong figures, which are also adapted for grass. In making provision for narrow gravel walks and box edgings, the compasses must be made to draw a double instead of a single line, because the double line forms the walk, and ensures a similar width all over; the following is perhaps a good specimen of this kind of



garden, and one glance will show the reader that by filling up different portions, instead of those that are filled up, a totally different figure could have been produced without in the least disturbing uniformity or trenching on the proper width of the gravel walks. It is impossible to imagine the beautiful effect that can be produced by dwarf flowering plants, when the heights and colours are arranged discreetly, and uniformly with due regard to the blooming season.

In laying out these gardens, a peg and a line are used, instead of compasses; the use of a six-foot line would make twelve feet circles, and they must be drawn as perfectly on the ground as on the paper; the peg should be iron, the line should be double, and be tied at the ends, because each end is then a sort of loop, but a single line with a short loop at

each end would do ; the one goes over the peg, the other we put the marking iron in, so that by walking round and marking as we go, we form a complete circle; by carefully moving the peg to any part of the edge of the circle, we can draw another circle, and again remove the peg to where the lines cross, and draw another, and so on the same as you would on paper. If this has to be done on a lawn, the circular marks can be best made with white pegs, unless a cutting instrument is used that will mark clearly without damaging the grass too much, because the lines will go over parts that are to be left as lawn, and consequently if damaged much could not be set to rights without relaying the turf. Pegs therefore are mostly used and placed pretty close together, and as soon as the necessary circles are all drawn, the portions to be cut out have the turf pared off exactly to the size and shape. These general rules will be found to comprise nearly all the art of laying out such gardens. Those with gravel walks and box edgings are more troublesome, because when marked out the paths have to be dug, and the stuff thrown on to the clumps, the edges neatly pared up like a sloping bank, the box laid along very even, and banked up from the path side. The paths are then filled with gravel and neatly levelled and rolled; but work of this kind once done is done for always, and as it is showy and will repay the labour, a little trouble should not be thought of. These little flower gardens are greatly ornamental in all establishments, if planted and kept well replenished.

TRANSMISSION OF CONIFERÆ FROM THE HIMALAYAS.

BY JAMES GRIGOR, NORWICH.

ONE of the great features of Arboriculture in the present day consists in the introduction of many species of trees belonging to foreign countries. Of these the chief are comprised in the various kinds of Coniferæ from the Himalayas. Having now a resident collector there, I am enabled to communicate some further particulars relative to the transmission of seeds, which cannot fail to interest all those who have waste lands to plant, or who may have friends or relations in India, through whom a supply may be procured. With many, the policy is to keep such information to themselves ; but as I am anxious to see the waste parts of England full of those splendid trees which adorn the mountains of India, no matter by whom such trees are supplied, I am induced to lay before the public all the particulars, so far as my short experience goes. My collector is at present stationed at Doyrah Dhoon, bounded on the east by the Ganges,

and on the west by its mighty tributary, the Jumna. This place is in the principality of Serinagur, North Hindostan. The Deodar forests appear on all the surrounding mountains, skirted, and in some instances the trees are intermingled, with those of the *Kyle*, which, from the seedlings in my nursery, I find to be the *Pinus excelsa* of botanists. The rainy season peculiar to that country generally commences in July, and ends about the 20th of September, and the best time to gather the cones, when they are intended to be sent home, is during the earlier part of October. In 1844, when the rainy season was over ten days sooner than it was ever known to stop before, and when the intensity of the sun was unexampled, it was necessary to gather the cones (which were rather prematurely ripened in that instance) three weeks sooner than usual ; but as a general rule the first three weeks in October may be considered the best time to collect them.

Great diversity of opinion exists as to the best mode of transmitting the seeds. When very large quantities are to be sent, I should recommend the packages to be forwarded by a sailing vessel. The seeds should come in the cones, packed in boxes amongst any dry chaffy substance. Every cone should be coated over with resin, or any other similar substance, to fill up the interstices between the scales, and carefully and tightly tied, so as to prevent the possibility of their expanding during the voyage. They should then be wrapped separately in brown paper and tied again. When thus treated, the air is excluded from the seeds; but if this precaution should be omitted, the cones will be in pieces when they reach this country, *and not one in a hundred of the seeds will vegetate*. Calcutta is the sea-port for the Himalayan district, and my last consignment of cones which came by a merchantman from that port, was about five months on the way.

When the packages are small, the overland route, *via* Egypt, should be adopted ; for by this mode seeds may be received in the course of two months from the time of their being gathered. The average length of passage from Calcutta to England, by the Oriental and Peninsula Steam Company's vessels, which carry Her Majesty's mails, is forty-eight days.

To Calcutta, packets should be sent by *Banghy*; those not exceeding twelve inches by twelve inches, or such as do not exceed fifteen pounds weight, are received at the post office, and forwarded at the convenience of the authorities there, that is, when they have a sufficient quantity for a despatch. Some idea of the expense will be inferred, when I state that the last parcel I had, which weighed $2\frac{1}{2}$ pounds, cost £1 15s. 6d.; but as it was paid to Calcutta, fifteen shillings more should be

added in order to get at the entire cost. This is expeditious work, but expensive. In order to make the most of it, therefore, the following instructions should be attended to:—Gather the cones in the last week of October, when many of them will be opening naturally with the heat of the sun: what are not open can be easily broken by pressure of the hand: select only plump, full seeds, detach them from the wings by rubbing, and then put them, along with the wings or chaff (which weighs nothing), into a wax-cloth bag. The chaff will keep the seeds from being bruised. In this way they will reach England in safety, and a great proportion of them will vegetate. In no instance should they be sent so as to reach this country later than the end of April. Upon the whole, I prefer the overland route for the *Cedrus Deodara* and *Pinus Webbiana*. The seeds of the *Kyle* or *Pinus excelsa* and the Hill Cypress (*Cupressus torulosa*) do well enough in a common canvass bag, enclosed in a box, and sent by any trading vessel. The former has a thick shell-like covering about the kernel, which no doubt accounts for its withstanding the influence of the weather; and the latter, though apparently without such protection, have grown remarkably well after a tedious voyage. The seeds of the *P. excelsa*, and *C. torulosa* should be steeped for two days before sowing in water, kept as warm as new milk: the *Deodar*, on the other hand, derives no benefit from this treatment.

To a very few it may appear superfluous, but I well know that for the sake of the many it is necessary to add how such packages should be addressed by any one living in India, who has the means of sending home pine seeds. Small packages, as I have said, will be taken charge of by the post-office authorities in the interior of the country: larger ones, weighing more than fifteen lbs., are forwarded by *pony*, *cooley*, or *cart*, travelling at the following rates:—Pony, six days per hundred miles; cooley, seven days per hundred miles; and cart, twelve days per hundred miles. The package should be fully addressed to the parties in England for whom they are intended, then forwarded, by either of the before-named conveyances, to some agent at Calcutta, together with an account of the value and contents of each, and instructions for them to forward the same *overland* to their London correspondents, who will duly receive, and communicate with the parties to whom they are addressed, as to when and where they shall be sent. The parties sending must pay or be answerable for the expenses payable at Calcutta, and the parties receiving must pay the expenses in London, viz., customs, clearing, &c.

NEW SEEDLING PELARGONIUMS.

DURING the season of the metropolitan exhibitions we took notes of all the seedling Pelargoniums which were exhibited; these notes we now lay before our readers in the annexed list, which may be regarded as a complete index to those which have appeared at the exhibitions of the Horticultural Society and the Royal Botanic Society, with one or two additions from the Royal South London Floricultural Society's shows, and half-a-dozen obtained by the late P. E. Lyne, Esq., of Plymouth, a most successful raiser of these plants; we have seen cut flowers of the latter. It may be desirable to explain that the colour of the lower petals, in all cases, forms the commencement of the description.

DESCRIPTIVE LIST OF SEEDLING PELARGONIUMS.

Abd-el-Kader (Hoyle), 1846.—Pink, top petals with a dark cloud, surrounded by a narrow edge of crimson; centre pale; size large; form good.

Admiration (Gaines), 1846.—Rose-pink, tinged with purple, dark veiny clouded top petals, edged with rose; medium size; second-rate.

Admiration (Miller), 1846.—Flesh-colour, top petals with dark cloud and narrow edge of pink; uneven.

Agricola (Catleugh), 1846.—Light rosy pink, veiny, top petals clouded, with an irregular and narrow edge of rose; centre pale; size small; form good.

Agrippina (Catleugh), 1846.—Purple rose, top petals with a dark veiny cloud and broad rose edge; size average; form moderately good.

Alarm (Gaines), 1846.—Light red, top petals with a dark spot; medium.

Albion (Thurtell), 1845.—White, top petals with dark clouding surrounded by purple, and with a white edge; indifferent.

Alpha (Attlee), 1845.—Flesh-colour, top petals with a dark spot, surrounded with a belt of rose colour, and edged with blush; centre white; form imperfect.

Anti-Bacchus (Hoyle), 1846.—Flesh-colour, top petals with a dark veiny cloud and a narrow edge of pink; size average; form good.

Attraction (Stedman), 1845.—Red; indifferent.

Avenger (Thurtell), 1845.—Flesh-colour, with rosy veins, top petals with a veiny cloud; size medium; indifferent.

Bacchus (Beck), 1845.—Pink, the lower petals blotched and veiny, top petals with a dark cloud and narrow margin of the ground colour; size average; form excellent. Obtained a second prize at the Horticultural Society.

Bird of Paradise (Goulding), 1845.—Light

red with a purple dash, top petals with dark veiny cloud; loose; indifferent.

Blanche (Beck), 1846.—White, with a tint of flesh-colour, top petals with a small crimson spot; size large; form good; a very promising flower.

Blazer (Beck), 1845.—Clear red, top petals with a dark irregular cloud edged with red; size large; medium.

Blencoe (Seymour), 1846.—Red purple, top petals with a dark veiny irregular cloud; indifferent.

Bride (Stedman), 1845.—White, top petals with purple spot; small.

Brilliant (Hoyle), 1846.—Bright red, top petals with a dark veiny irregular cloud; indifferent.

Caractacus (Gaines), 1845.—Rose, top petals with dark veiny cloud; uneven.

Cassandra (Beck), 1846.—In the way of Beck's *Desdemona*. Pale blush, top petals very dark, with a narrow pink edge; size large; form excellent. Obtained a certificate* at the Horticultural Society.

Cassandra (Gaines), 1845.—Red, top petals with a dark veiny spot; uneven.

Cavalier (Beck), 1846.—Light red, top petals with a maroon cloud and irregular narrow edging; size large; form good.

Centurion (Beck), 1846.—Deep rosy pink, top petals with a dark cloud, shaded off, showing an irregular margin of rose-pink; centre white; size average; form excellent. Obtained a certificate at the Horticultural Society.

Ceres (Hoyle), 1845.—Flesh-colour, top petals with a dark veiny clouded spot edged with pink; centre pale; very uneven.

Chimborazo (Silverlock), 1845.—Red, top petals with a dark veiny irregular cloud; medium.

Chieftain (Gaines), 1845.—Light red, top petals with a small veiny spot; size medium; form moderately good. Chiefly useful from its clear lively colour, which a little resembles that of *Duchess of Leinster*.

Colonel of the Guards (Hoyle), 1846.—Clear red, top petals with a dark mottled cloud and broad margin of crimson; size large; form medium.

Comet (Gaines), 1845.—Bright red, top petals with a dark spot; medium.

Commander-in-Chief (Hoyle), 1846.—Lively rose, top petals with a dark cloud, edged with crimson; size large; form good.

Compacta (Miller), 1846.—Light rosy red, petals with dark spot and veins; medium.

Compactum (Beck), 1846.—Blush-pink, top petals with a dark veiny cloud and narrow edge of rosy pink; centre clear white; size average; form excellent, even. Obtained a certificate at the Royal Botanic Society.

Competitor (Beck), 1845.—Bright rose-pink, top petals with very dark cloud, margined narrowly with rose; centre pale; size full average; form excellent. Obtained first prizes at the Horticultural Society and the Royal Botanic Society.

Conqueror (Thurtell), 1845.—Rosy; irregular shaped; indifferent.

Corsair (Hoyle), 1846.—Deep rose-pink, top petals with a dark cloud, edged with rose; form good; size large.

Cracker (Beck), 1846.—Pale rose-red, top petals with a dark veiny cloud and irregular edge; size average; form good.

Cruenta (Beck), 1846.—Crimson, top petals with a dark irregular cloud edged with the ground colour; size average; form good, even. Obtained a certificate at the Royal Botanic Society.

Cygnus (Catleugh), 1846.—Blush, top petals with a veiny cloud and blush-coloured edge; size large; rather loose.

Dawn of Day (Beck), 1846.—Pink, top petals with a dark crimson maroon cloud edged with pink; centre pale; size average; form good.

Dobsoni (Beck), 1846.—Pink, top petals with a dark cloud passing off to rose, and margined with a clear pink edge; centre white; size large; form good.

Don Quixote (Clark), 1846.—Pink with rosy veins, top petals with dark veiny cloud and narrow edge of rose; medium.

Dulcima del Toboso (Clark), 1846.—Pink tinged with purple, top petals with a dark shaded cloud edged with pink; centre white; size large; form good.

Dun (Bunney), 1845.—Pink, top petals with a broad veiny spot and a broad edge; centre white; medium.

Eclipse (Hoyle) 1846.—Large brilliant red, top petals with a small veiny cloud; form good, a little crumpled. Chiefly remarkable for its colour.

Effect (Beck) 1846.—Blush, top petals with a dark cloud surrounded by a dash of crimson, and edged with blush; size average; form good. A very pretty flower.

Egyptian Prince (Miller), 1846.—Flesh colour, top petals with a dark veiny cloud and narrow edge of flesh colour; form indifferent.

Ellen (Gaines), 1845.—Flesh colour, top petals with a dark veiny cloud shaded off to crimson, and an irregular pale edge; medium.

Emperor of China (Thurtell), 1845.—Whitish, top petals with a rosy-purple cloud and narrow edge of white; medium.

Emperor of Morocco (Hoyle), 1846.—Rosy-pink veined, top petals with a dark cloud narrowly edged with rose; centre pale; size large; form good, even.

Euphemia (Hoyle), 1845.—Pale flesh colour,

* A certificate is the highest reward offered for seedlings of the current year.

top petals with dark veiny spot ; size large ; form medium.

Exquisite (Hoyle), 1845.—Brilliant rosy-red, top petals with an irregular dark veiny cloud and an uneven edge of crimson ; size large ; form good, even. Obtained the second prize at the Royal Botanic Society.

Favonius (Beck), 1846.—Rose, with dashes of crimson, top petals dark clouded, shaded off so as to show a pale rose edge ; centre clear white ; size large ; form good.

Felix (Matthews), 1846.—Rose, top petals with dark cloud and narrow pink edge ; centre pale ; medium.

Fireball (Thurtell), 1845.—Bright vermilion, top petals with small spot ; the colour is brilliant, but the flower has no other merit.

Fireblaze (Miller), 1846.—Red, top petals with mottled clouding ; form bad.

Firefly (Lyne), 1846.—Bright light vermilion, top petals with a dark, nearly black, velvety mottled cloud and narrow edge of scarlet ; centre whitish, shaded with a blue tint ; size medium ; form and substance good ; distinct and pretty.

Flora's Flag (Hoyle), 1846.—Blush, top petals with a dark veiny cloud surrounded by a dash of crimson and margined with blush ; size average ; form good, a little uneven. Obtained a certificate at the Royal Botanic Society.

Forget-me-not (Lyne) 1846.—Rich vermilion, top petals with an intensely dark cloud. In the way of Lyne's Duke of Cornwall, but much superior to it.

Friend (Hoyle), 1846.—Flesh colour, top petals with a dark cloud and pale rose edge ; small.

Fulgens (Stedman), 1845.—Red, top petals with a dark veiny spot ; medium.

Gem (Beck), 1846.—Pink, top petals crimson maroon surrounded by a narrow margin of pink ; size average ; form good. Obtained a certificate at the Horticultural Society.

Gertrude (Hoyle), 1846.—Deep pink, top petals with a dark cloud and irregular edge of pink ; centre white ; size average ; uneven.

Gipsy King (Smith), 1846.—Light rosy red with dark veiny cloud ; uneven.

Governor-General (Hoyle), 1846.—Bright crimson, top petals with a veiny dark cloud and broad margin of crimson ; size large ; form good. A remarkably showy flower, and one of great promise.

Glow (Beck), 1846.—Pale rose, top petals with a dark irregular cloud edged with rose ; size large ; rather uneven.

Glow-worm (Thurtell), 1845.—Red, top petals with a dark cloud and irregular edging ; indifferent.

Harlequin (Beck), 1846.—A very remarkable variety. The lower petals are white, with

a tinge of flesh colour and dashes of deep rose ; the top petals have a very black cloud, which nearly covers them, the edge of this is crimson, and this again is edged with white. What is very singular, the petals are all cut up into irregular segments. It is quite a curiosity.

Hebe's Lip (Beck), 1845.—Deep pink with a blotch of rose, top petals with a dark cloud and irregular edge of rose ; centre pale ; size average ; form excellent. Obtained a first prize at the Royal Botanic Society, and a second prize at the Horticultural Society.

Heidos (Hoyle), 1845.—Pale rose, lower petals with numerous dark rosy veins and small patches of rose, top petals with dark cloud and narrow edge of pink ; size average ; form good, even. A pretty fancy flower, to which a certificate was given, on that ground, by the Royal Botanic Society.

Ibrahim Pacha (Gaines), 1846.—A pretty fancy variety in the way of Anais ; white, with purplish blotches on each petal.

Ibrahim Pacha (Hoyle), 1846.—Rosy red, top petals with a dark veiny cloud edged with crimson ; centre pale ; size medium ; form good.

Isabella (Hoyle), 1845.—Light rose, with dark clouded top petals ; large ; rather loose.

Jago (Gaines), 1846.—Pink, top petals with dark veiny cloud ; centre white ; medium.

Juliet (Hoyle), 1846.—Rose pink, top petals with dark cloud shaded off to crimson with a pink edge ; size medium ; rather uneven.

Lady Kitty (Gaines), 1846.—Pink, top petals with dark cloud edged with pale rose ; centre pale ; medium.

Lelia Superb (Seymour), 1846.—White, with coarse veiny spot ; form loose ; indifferent.

Lily (Hoyle), 1846.—White, top petals with small purple-rose spot ; size small.

Lord Hardinge (Gaines), 1845.—Rose with a purplish tinge, top petals with dark mottled cloud, and broad margin of rose ; size average ; form good. Rather dull looking ; obtained a certificate at the Royal Botanic Society.

Lord Seaton (Clark), 1846.—Pink with rosy veins, top petals dark with narrow pink edge ; medium.

Lord Stanley (Hoyle), 1846.—Purple, top petals nearly covered with a very dark cloud surrounded by a narrow belt of purple ; size average ; form excellent, even. Obtained a certificate at the Royal Botanic Society.

Margaret (Stedman), 1845.—Light red, top petals with a dark veiny spot ; medium.

Mars (Catleugh), 1846.—Red, top petals with a veiny cloud edged with crimson ; size average ; form moderately good.

Mary Queen of Scots (Gaines), 1845.—White, with dark cloud on upper petals, shaded off to purple with a white margin; form good; full size; rather deficient in substance; but whites are much wanted.

Maxima (Gaines), 1846.—Light red, top petals with a small veiny spot; medium.

Melpomene (Cock), 1845.—Purple rose, top petals black with a narrow even margin of purple; size medium; form excellent, very even. Obtained a first prize at the Royal Botanic Society.

Model (Gaines), 1846.—Purplish rose, lower petals somewhat veiny, top petals with dark cloud and narrow purple edge; size average; form good, even. Obtained a certificate at the Royal Botanic Society.

Model of Perfection (Miller), 1846.—Pink, top petals with a dark cloud; medium.

Mont Blanc (Miller), 1846.—White, top petals with a dark spot; medium.

Mountain Maid (Goulding), 1845.—Blush, top petals with a long narrow blotch; loose; indifferent.

Mount Etna (Hoyle), 1845.—Brilliant crimson, top petals with a very dark cloud, surrounded by a margin of the ground colour; rather uneven; medium size. Remarkable and valuable from its brilliancy; obtained a first prize at the Royal Botanic Society, and a certificate at the Horticultural Society.

Mount Vesuvius (Stedman), 1845.—Pale red, top petals orange with black spot; indifferent.

Mrs. Brock (Gaines), 1846.—Red, top petals with small clear dark spot; medium.

Negro Boy (Stanley), 1846.—Brilliant purple, lower petals rather veiny, top petals with a dark veiny cloud and irregular edge of purple; size medium; form good.

Nourmahal (Lyne), 1846.—Bright deep rose-pink, top petals with a medium sized very dark spot passing off into a feathered edge, through a dash of crimson which surrounds the spot, the whole edged with a broad belt of pink; centre pale; size large; form good, flat; a distinct and pretty variety, of good properties.

Oliver Cromwell (Hoyle), 1846.—Purple with a pinkish tinge, top petals with a dark cloud, and an irregular edge; centre pale; size large; form rather uneven.

Pacha (Beck), 1846.—Rose, lower petals with numerous veins of deep rose, top petals with a dark cloud and a very narrow rose edge; centre pale; size average; form excellent. Obtained a certificate at the Royal Botanic Society.

Patrician (Beck), 1845.—Clear rosy pink, top petals with a dark cloud lightening off so as to show a crimson edge; size large; form excellent. Obtained a first prize at the

Royal Botanic Society, and a second prize at the Horticultural Society.

Pedlar (Beck), 1846.—Purplish rose veiny, top petals with a dark cloud edged with purple; size average; form good.

Peri (Matthews), 1846.—Black, top petals with dark radiating veiny cloud; medium.

Pickwick (Miller), 1846.—Pink, top petals covered with dark veiny clouding; second-rate.

Pompeii (Clark), 1846.—Purple-rose, top petals with a dark veiny cloud edged with rose; medium.

Precision (Hoyle), 1846.—Purple rose, top petals with a dark veiny cloud and broad margin of ground colour; size medium; form good, even. Obtained a certificate at the Royal Botanic Society.

President (Hoyle), 1846.—Bright red, top petals with a large dark spot; size medium; form good. Obtained a certificate at the Horticultural Society.

Princess Olga (Gaines), 1846.—Pale red, top petals with dark veiny cloud dashed round with crimson; medium.

Purpurea (Beck), 1846.—Purple rose, top petals with a dark cloud and very narrow margin of purple; size medium; form good.

Queen (Franklin), 1845.—Pink, top petals with a dark cloud; centre pale; form bad.

Queen of Beauties (Lyne), 1846.—Clear, light rose-pink; top petals very dark and velvety, with a narrow margin of bright rose; size medium; form excellent; a distinct and remarkably pretty flower.

Queen of Tyre (Hoyle), 1846.—Purplish rose, top petals with a small cloud gradually breaking off, and edged with purple; size average; form good. Obtained a certificate at the Royal Botanic Society.

Rosalind (Hoyle), 1846.—Dark crimson red, top petals with an irregular cloud; size average; loose.

Rosamond (Beck), 1846.—Purple rose, with a dash of deep rose on the lower petals; top petals clouded, the clouding shaded off to purple at the edge; centre pale; size average; form moderately good.

Roundhead (Beck), 1846.—Rose pink, top petals with a dark cloud, edged with rose; size large; loose.

Roxana (Hoyle), 1846.—Dark crimson, top petals with a dark veiny cloud; size below medium; uneven.

Saracen (Hoyle), 1846.—Pink, the lower petals spotted in the same way the top petals of some of the old varieties are marked; top petals with a dark veiny cloud; size average; form indifferent.

Scipio (Hoyle), 1846.—Pink, top petals with a dark cloud and rose edge; centre pale; size large.

Shiner (Beck), 1845.—Light red, top petals with a dark veiny cloud, edged with crimson; size average; form good.

Sirius (Beck), 1845.—Light red, top petals with a dark irregular cloud; medium.

Sir H. Smith (Gaines), 1846.—Purplish rose, with dark spot on top petals; medium size; form moderately good.

Sir W. Wallace (Lindsay), 1845.—Red, top petals with a dark mottled cloud; form bad.

Smouch (Beck), 1846.—Rose, top petals with a dark cloud and narrow rose edge; size average; a little uneven.

Snowball (Thurtell), 1845.—White, top petals with small crimson veiny spot; reflexed; indifferent.

Stromboli (Hoyle), 1846.—Pink, top petals with a dark veiny cloud, surrounded with an edge of rose pink; centre white; form moderately good.

Sunset (Hoyle), 1845.—Pale red, top petals with a veiny mottled cloud, edged with bright red; size average; form good, even.

Talisman (Lyne), 1846.—Purplish rose, with slight purple dashes; top petals with a dark veiny blotch, edged with a narrow band of bright rose; medium size; lower petals rather long.

The Derby (Seymour), 1846.—Deep rose, top petals with small dark irregular cloud; size large; indifferent.

The Oaks (Seymour), 1846.—Blush rose, top petals with a dark veiny spot and broad edge of rose; indifferent.

The Peri (Lyne), 1846.—Rose pink, with a purplish tinge; top petals with a dark veiny spot, surrounded by a belt of crimson, and edged with pink; centre white; size large; form and texture good, but a little uneven.

Veritas (Miller), 1846.—White, top petals with a purple veiny cloud; coarse looking.

Vista (Miller), 1846.—Blush, top petals with a dark cloud and narrow edge of pink.

Volgius (Miller), 1846.—Flesh colour, top petals with a dark veiny cloud, edged with rose; centre pale; size average; form good, even. Obtained a certificate from the Royal Botanic Society.

BRITISH PLANTS.

THE GENUS THALICTRUM.

Character.—*Calyx*, petaloid,* of four or five segments, very deciduous. *Petals* none. *Stamens* numerous. *Ovaries* four to fifteen. *Carpels*, stalked, single-seeded, not bursting, without awns.—*Cauliscent*, herbaceous plants, with *yellow fasciculate* roots, and *fistular* stem, *compound* leaves, and *panicled* flowers. There are four British species.

* *Petaloid* signifies, resembling a petal.

* *Stamens* pendulous.

Th. alpinum, Linnæus—Alpine Meadow Rue. Stem simple, almost naked; flowers in a *simple terminal raceme*; pedicels reflexed in fruit; carpels shortly stalked, curved at the



Thalictrum alpinum.

end. An herbaceous perennial, growing from three to six inches high; stem quite smooth, nearly leafless; leaves twice ternate, with roundish wedge-shaped segments, deeply cre-



Thalictrum minus.

nate or lobed, mostly radical, on long stalks; inflorescence, a simple terminal raceme; flowers small, distant, each on a slender pedicel,

reflexed in fruit, and furnished with ovate lanceolate bracteas. Flowers in June and July; and is found on elevated moist alpine pastures, on the higher mountains of the North of England, Wales, and Scotland.

Th. minus, Linnaeus—Lesser Meadow Rue. Stem zigzag, striated, branched; leaves doubly or triply pinnate; leaflets ternate, three cleft, glaucous; *stipules rounded*, spreading; *flowers panicked*; carpels attenuated at both ends. An herbaceous perennial, growing from one to two feet high, with a somewhat creeping root, and erect stem, bearing pinnated leaves, with bluntish wedge-shaped ternate leaflets. The inflorescence is a spreading panicle, with simple awl-shaped, or ternate bracteas. The carpels spreading, deeply furrowed. Flowers in June and July. Found on hills and rocky places, especially in limestone or chalky pastures, or by the sea-side; not unfrequent.

Th. majus, is by some regarded only as a variety; it differs chiefly in having *crenate-shaped stipules*, and *sub-umbellate flowers*. There is also a variety called *glandulosum*,

or wedge-shaped, trifid, the upper ones almost linear. The inflorescence is a terminal, upright, sub-corymbose panicle, consisting of



Thalictrum flavum.

numerous densely crowded erect flowers, on short pedicels, with lanceolate smooth bracteas. Flowers in June and July. It is found, rather commonly, in wet meadows, and by the banks of rivers, but less frequently met with in Scotland. There is a variety of it called *ovatum*, which has broader leaflets, with a rounded base. The plant is altogether very variable in the shape of its leaflets.

All the *Thalictrums* are worth cultivating among the particular class to which they belong—hardy herbaceous plants. *Th. minus* and *Th. alpinum*, are very pretty little plants indeed for rockwork, or the front part of a mixed flower border. The other kinds mentioned are of larger growth, and associate with common herbaceous plants. The genus possesses bitter, somewhat cathartic qualities, but none of the kinds are now used medicinally; they are not relished by cattle. The flower has been used as a yellow dye for woollen goods, but is not much valued for that purpose.



Thalictrum majus.

which has the stems and leaves covered with short *glandular pubescence*.

** Stamens erect.

Th. flavum, Linnaeus—Common Meadow Rue. Root creeping; stem erect, furrowed; leaves bipinnate; *panicle corymbose*, compact; *flowers erect*. An herbaceous perennial, growing three or four feet high, with a somewhat creeping root, and erect stems. The leaves are bipinnate, with ovate acute stipules, toothed on the margin; the leaflets are smooth, rather pale beneath, broadly ovate,

CRYPTOMERIA JAPONICA.

Cryptomeria japonica ranges in the section *Cupressinea* of the natural order *Coniferae*, and is closely allied to the common cypress, both botanically and in habit. It is a native of the various islands composing the empire of Japan, in the larger islands of that group forming a prominent feature in the woods

which clothe the hills and mountains to the height of 1,200 feet or more. It forms a tree attaining an altitude of 100 feet, the trunk from four to five feet in diameter, with a dense pyramidal head, and branches growing rather erect or nearly horizontal. The flowers are monœcious, the male spikes being produced on the extremities of the shoots, whilst the females are placed on the lower twigs of the same shoots; the last are of a globular shape, and attain about the size of a walnut.

The botanical history of this plant is rather curious, showing that the descriptions of even the oldest travellers, especially of such as at all devoted their attention to plants, should not be slighted by those who may follow in the same track. In 1784, Thunberg described this plant under the name of *Cupressus japonica*. In 1834, Professor Don described it under its present name, from a specimen of Thunberg's. Yet Loudon in his *Arboretum Britannicum*, merely mentions it under Thunberg's old name, and in the *Encyclopædia of Trees and Shrubs*, excludes it altogether, taking no notice of Don's description and excellent figure in the eighteenth volume of the *Linneæan Transactions*. In 1844, Dr. Siebold published a figure and description of it in his *Flora Japonica*, and in the same year seeds of it were received by the Horticultural Society from their collector at Shanghae in the north of China, where it appears to have been introduced from Japan, being used for avenues, and other decorative purposes in gardening, but not apparently occurring in a wild state. Since that period the Society have received both living plants, and considerable supplies of seed, and the plant is now common in collections.

The great value of the tree in this country arises from the great probability of its proving perfectly hardy, which, coupled with its evergreen habit, and stately growth, will make it eagerly sought after for ornamental planting when once its merits are known. In Japan, its wood, which is soft and easily worked, is much used for cabinet work. In this country, of course, it is not likely to be applied in such a way, at least, for the present.

In cultivation, the *Cryptomeria* is of easy management; while confined to a pot it grows freely in a sandy loam, and no doubt it will do out of doors in any spot not too damp. Of course some care will be taken of plants recently turned out, to shelter them from bad weather, but we must wait a few years yet ere we can decidedly say whether it will do well in exposed situations. Potted in a soil like that recommended above, and placed in a cold pit, it grows rapidly, requiring a considerable supply of water during the growing season, any deficiency in that article being

immediately felt. It should be shifted as often as the roots reach the sides of the pots, and before they begin to mat. By this means a fine plant may be produced in a couple of years, fit for turning out in the following spring, for which purpose it should be gradually hardened off after completing the previous year's growth.

Mr. Fortune, the collector of the Horticultural Society, refers to the *Cryptomeria*, as forming one of the most beautiful and stately trees on the hill sides, in the northern districts of China, growing there about as tall as the common pine, with stems perfectly straight, and the branches hanging most gracefully on all sides, in the way of the *Araucaries* of Norfolk Island. The wood is also strong, durable, and highly prized.

THE TOMATO.

THE Tomato (*Lycopersicum esculentum*) was originally introduced to Europe from America, where, in Mexico and Peru, it appears to have been cultivated from time immemorial. It was grown as a curiosity by Gerard, in England, in 1596, although it had been cultivated on the continent for its fruit for a number of years previous. The ripe fruit is used in various ways in soups and sauces, some persons becoming extravagantly fond of it.

There are several varieties to be met with in gardens; but the one generally grown for the abundance and quality of its fruit, is the *large red Tomato*, with leaves deeply divided, rough with hairs, and producing bunches of conspicuous yellow flowers, succeeded by large curiously lobed fruit, which acquire a brilliant orange red, or scarlet colour, as they ripen.

The *small red Tomato* has globular fruit, rather flattened at the stalk and apex, about an inch and a half in diameter.

The *pear-shaped Tomato* has egg-shaped fruit, with the smallest end next the stalk, about two inches long. This seems a more tender variety than the others, and its fruit does not ripen so soon.

The *Red-cherry Tomato* has round fruit, about the size of a large cherry, and is, perhaps, the best variety for pickling whole, being of a sharper acid flavour than the others. It is also, most probably, the parent species of all the other varieties, however widely they differ in size, form, and colour.

The *large Yellow Tomato* differs in nothing from the first-mentioned variety, except in colour, which is a bright pale yellow, and in its flavour being inferior.

The *small, or Yellow-cherry Tomato*, also differs in the same way as the last from the Red-cherry variety, and neither of the two last are worth cultivation, except as curiosities.

It appears evident, from various circumstances, that all these are varieties only of the Red-cherry Tomato; and for use, that sort and the large red only are worth cultivation. All the varieties are very much alike in leaf and manner of growth; and the monstrous forms assumed by the large sorts are evidently the result of high culture; for if the large red be grown in poor soil, and be kept comparatively starved, a great number of the fruit will be nearly identical with the second variety in regularity of form, whilst that variety can seldom be grown without several of the fruit approaching the monstrous forms of the large red. This irregularity of form is caused by the adhesion of several flowers together, another proof of excessive development by long-continued cultivation.

A variety with white fruit appears to be entirely lost, although that it once existed admits of little doubt, as it is distinctly mentioned in various old botanical works. Such being the case, a similar variety may, perhaps, again be detected by some curious observer. There are also various species and varieties yet to be introduced both from America and the East Indies.

A sort nearly resembling, if not identical with the Red-cherry Tomato, called the Fig Tomato, has lately been prepared as a dry sweetmeat, and is said to resemble the fig somewhat in flavour; but although agreeable, it retains a taste of its own, marking it sufficiently from that fruit. It will, no doubt, flourish with the same treatment as recommended for the others, and may be worth trying by those curious in confectionery; and, of course, the green fruit may be pickled as the others.

The Tomato is a plant of easy culture, being of strong, coarse growth, delighting in a rich soil and hot exposure. About the beginning of March, the seeds should be sown in pots of light rich earth, covered slightly, and placed in a cucumber frame, or other structure, where a good heat is maintained. They will soon vegetate, and should then receive sufficient air to prevent their drawing up weak. When two or three inches high, they must be potted off in small pots, one, two, or more plants in a pot, and should then be again set into a close frame for a day or two, until they have made fresh roots, when they should receive more air, and as the season advances, be gradually inured to the open air. About the middle of May, they may be turned out against any vacant places on the walls between the trees, the south wall, of course, being the best. As the plants advance, they should be nailed neatly against the wall, and as soon as the two first trusses of bloom on each shoot are formed, the branches should be stopped immediately

beyond the leaf above the second truss, and no more lateral shoots be allowed to form, care being taken to preserve the leaves, especially those near the trusses of bloom. The number of shoots on each plant may vary from three to five, leaving from six to ten trusses of fruit. The plants should be freely watered in dry weather, and the fruit be well exposed to the sun as it approaches maturity. The quantity of fruit recommended above will generally be found as many as the plant can ripen during our summers; and they will be much larger and finer than if the plants were allowed more of their own straggling growth. Where walling or paling cannot be spared, a bank or ridge of earth, sloping to the south, will be found a good situation for them, care being taken to stop the shoots, and keep the leaves from shading the fruit as they attain their full size. In order to render the fruit still finer, the small or badly placed berries should be cut away, and the truss supported by a string and nail, so as to keep the fruit apart, and prevent them from damping. Any of the full-grown fruit not sufficiently forward by the time the autumn frosts approach, should be gathered when perfectly dry, and laid upon shelves or other places in the vinery pits, or other places where they will remain dry, and be fully exposed to the light. Here they will gradually ripen, and will prolong the season for them considerably. A fruit or two of the finest and earliest should be allowed to ripen thoroughly, even to rottenness, and should then be squeezed up in water, the seed carefully washed, dried, and put by in paper, for next season's supply.

THE ENDIVE.

THE Endive (*Cichorium Endivia*) is said to occur in a wild state in the northern provinces of China, and appears to have been known and cultivated in Europe at least as early as the middle of the sixteenth century, probably long before. Its great excellence as a winter salad is well known, and, as is usually the case in this branch of horticulture, many varieties are grown on the continent, which are slightly known or quite disregarded here. The following list will be found to contain those commonly cultivated in this country, and also some continental varieties worthy of attention.

The different sorts of Endive are distinguished into two classes, as the Curled Endives, (called *Chicorées* by the French,) which are distinguished by their narrow, very much cut and crumpled leaves, and also as being generally of a deeper green colour than the Batavian Endives, (called *Scaroles* by the French,) which have broad, toothed leaves, seldom approaching anything near the first in their

deeply cut and crumpled leaves, and also being generally of a yellowish green hue in the whole plant.

The *Large Green Curled Endive* is of rather upright growth, the outer leaves loose, and the inner ones not quite so much cut as in the next variety. It is a hardy sort, blanches well, and is not liable to rot. It is, perhaps, the most grown of its class in this country.

The *Small Green Curled Endive* is hardly more than half the size of the last, the outer leaves growing about six or seven inches long, flat on the ground, and they are much cut and curled. It forms a close heart, and blanches well, coming in early; but is liable to rot in wet weather.

The *Small Green Curled French Endive* is the smallest sort of all, the leaves being very much cut, and lying flat on the ground. It forms a full heart, but is rather tender, and liable to rot. It blanches well under a tile or pan.

The *White Curled Endive* has fine curled leaves, spreading flat on the ground, of a lighter green than any other curled Endive, and it scarcely forms a heart. It is tough and bitter when grown for winter use, and is best sown thick and cut young, in which way it is used in salads in France.

The *Green Curled Dutch Endive* is something like the Large Green Curled, but the leaves are broader, do not curl so much, and it forms a closer heart. It is a hardy sort, and blanches well.

The *Green Curled Italian Endive* has long narrow leaves, regularly and deeply cut, and much curled, of rather erect growth, but blanches well, and is worth growing.

The *Long Green Curled Italian Endive* is of upright growth, with long deeply cut leaves, which do not curl. The inner leaves are few and short, but form a good heart. It is a good but rather straggling sort.

The *Small Batavian Endive* has broad leaves, rather ragged at the edges, the inner ones folding one over the other so as to form a very large heart. It is of a whitish pale green colour, and is mild and sweet in flavour. It is easily blanched, and is perhaps the very best of the Endives.

The *Large Batavian Endive* has larger, broader, and more rounded leaves than the last, and is also of rather deeper colour. The inner leaves grow like the last, forming a well blanched heart, of good flavour. These varieties are more hardy than the curled Endives.

The *Broad-Leaved Batavian Endive* has large, long, broad and coarse leaves, growing very upright, and which require tying in order to blanch the heart, which is small and loose without. It sports a great deal, and is not a good sort, being of a more bitter flavour than some others.

The *Curled Batavian Endive* has smaller and narrower leaves than the last, which are curled, and spread on the ground, where they eventually form a small heart. It evidently closely connects the two classes of Endives.

The *Lettuce-leaved Batavian Endive* has large, broad, pale coloured leaves, which are blunt, slightly ragged, and very thin. It forms a loose heart when tied up, but is very tender, and only fit for the earliest crop.

Many other names are to be found in the seedsman's lists, some synonymous with the above, others differing more or less. A variety called the *new transparent yellow Endive*, with the leaves much curled, is highly spoken of, and appears to be another sort connecting the two classes. The French possess several others, well worthy of attention as additions to our list of salads.

The earliest crop of Endive should be sown about the beginning of May, in a light rich border. This sowing should be small, and additional sowings should be made in the beginning and middle of June, and at similar periods also in July, if large and regular successions are wanted. Scatter the seed thinly, and slightly rake it in, protecting it well from birds. If the weather prove dry, the seed-beds should be regularly watered. Keep them clear of weeds, and when the plants are about three inches high, transplant them to the most convenient spot for them to attain their full size. It is, of course, neatest and best to have them in beds by themselves, but this is not always practicable, and the ridges between the rows of celery is a very handy situation for them. The plants should be set about a foot apart from each other, and kept well watered until they have established themselves, and also if the season be a dry one. Fresh plantations should be made every fortnight, as the different seedlings become large enough to transplant. Keep down the weeds, the earth well stirred, and give all the encouragement possible, by the occasional use of manure water, so as to ensure a quick and tender growth, on which the excellence of the crop depends.

By the beginning of August the earliest crops will be large enough for blanching. This may be done by tying the plants up like lettuce, if the leaves are long enough, or by covering each plant with a tile or garden pan, or by laying a light board lengthways on a row. This of course should be done on a fine day, when the plants are thoroughly dry. In the course of ten days or so the hearts will be found blanched, and fit for use.

As the large crops for winter and spring use are much better planted out in beds, than stuck about like the earlier ones, more economical methods of blanching and protecting the plants

from frost may be had recourse to. Leaves, fern, or similar light materials may be laid over the beds to a thickness of a foot or more, which will generally exclude a great deal of wet as well as frost. But to keep them as long as possible, the last crops should be taken up on a dry day, before any serious frost happens, and they should be packed close together, in rather dry mould, in frames or pits, where they can have the benefit of air in fine weather, and be thoroughly protected from frost and wet at all times.

SPINACH.

THE Spinach (*Spinacia oleracea* of Linnaeus), appears to have been a cultivated plant at a very early period; in fact, so early that its native country seems not to be known, although it appears to have been first noticed as a culinary vegetable in this country about 1568. There can be little doubt but it was in cultivation long before that period, even in this country; if not elsewhere, in the religious establishments, which in the times preceding the above date were almost the only places where anything deserving the name of gardening was carried on. Its common growth and well-known uses as a vegetable in early spring and through the summer, render it unnecessary to say anything about the various methods of preparing it for the table.

The most common varieties of Spinach in cultivation are the *Prickly-seeded*, or *Winter*, and the *Round*, or *smooth-seeded*, or *Summer*. These differ in little except the seed, as indicated by the names, and in the prickly-seeded standing the winter best. The summer variety is also rounder in the leaf, and does not run to seed quite so soon in the summer.

The *Flanders Spinach* was introduced from Paris rather more than twenty years ago, and is a most excellent sort. The seeds are roundish and smooth, the leaves very large, often exceeding a foot in length, very thick and succulent; they are produced in greater quantities than by the common sorts, and the plant grows more bushy. It is hardier than the others, and does well either as a winter or summer crop, being slow in running to seed.

The *Lettuce-leaved Spinach* is a variety cultivated in the French gardens, and is recommended as an excellent sort for winter crops. The leaves are dark green, large, thick, and very succulent. It is a round-seeded variety.

Riley's New Burdock Spinach is an American variety, originated near Philadelphia, and said to attain the size of half a bushel, when properly treated. The leaves are described as perfectly smooth, and the plant to

resemble the savoy in appearance. The quality is stated to be very superior, and the plant stands a North American winter without injury. It appears to be a very desirable sort, but does not appear to have been introduced.

The ground for Spinach should be well and deeply dug, breaking the soil up fine, and leaving it as light as possible. It should be well dunged, if not previously in good condition, and for the winter crops a warm sheltered spot should be chosen. About the middle of August, earlier or later according to climate and exposure, sow the main winter crop in drills, from fifteen to eighteen inches apart, according to the variety preferred. Cover the seeds barely an inch with soil, and slightly tread them in, especially in light soils; rake the ground level, treading as little as possible on or between the rows. If the weather is very dry when this crop is sown, it is a good plan to well water the drills previous to depositing the seed in them, they then vegetate quickly, and the young plants soon establish themselves. When the plants are large enough to be clearly distinguishable, thin them out to six or nine inches apart in the rows, hoeing the ground deeply, and cutting up all weeds. An occasional hoeing after this, is all the further attention the crop will require, taking care to well stir the ground every time. If very hard weather sets in, a portion of the crop may be sheltered with the spray of trees, which will generally prove a sufficient protection.

If the weather is sufficiently open, a small crop should be sown about the middle of January, in a sheltered situation, to succeed the winter crop. The sort should be the summer or Flanders, whichever is preferred. From this time forward additional sowings should be made as the last sown crop appears above ground, making a considerable sowing about the end of March. The crops for use in the summer are generally sown between the rows of peas, beans, and in similar places, where the partial shade is very beneficial to the plants, delaying their running to seed. Of course, similar attention to thinning, weeding, and stirring the soil, should be paid to these as to the winter crop. Pigs are very fond of Spinach, and therefore any excess of crop can generally be made good use of.

CUPHEA PLATYCENTRA.

(Bentham.)

BROAD-SPURRED CUPHEA.

THIS species of Cuphea forms a small suffrutescent tuft of about a foot in height, or less; the branches are compressed and very slightly

downy ; it has opposite elliptic pointed leaves, narrowed at the base, and when grown luxuriantly, they are about two inches long, but are smaller out-doors in a dry, warm situation. The flowers are produced singly, on slender stalks, from the axils of the leaves ; they are about an inch long, and consist of a tube divided at the extremity into six small segments, and a spur which is somewhat dilated and rounded ; the colour of the flower is a bright vermilion scarlet, and they are produced profusely during the greater part of the year ; indeed, when planted out as above noticed, the plants become thickly studded and are then far superior, for that purpose, to a Fuchsia.



Cuphea platycentra.

The plant is a native of Mexico, whence it appears to have been brought in a dried state by Mr. Hartweg, and described under the name here adopted by Mr. Bentham in the *Plante Hartwegianæ*. In a living state, its first appearance in this country was in the stove of J. Anderson, Esq., The Holme, Regent's Park, whose gardener, Mr. Smith, produced a somewhat over-excited plant of it, at one of the exhibitions of the Royal Botanic Society in 1846. It was accidentally detected by Mr. Smith growing on some of the Orchids imported by Mr. Skinner, from Guatemala, the seeds having vegetated when the Orchids were submitted to the atmospheric conditions congenial to their nature.

The company in which the plant was detected led to the supposition of its requiring a low degree of stove temperature, but subsequent experience with the plant proves it is much better grown in a greenhouse, or even out of doors, during the summer months. Indeed, it is under the latter aspect that the chief merit of the plant is displayed. When grown in the confined atmosphere of a stove,

it is apt to grow away too freely, and the consequence is that fewer flowers are produced, and those in some degree hidden by the foliage, which is then larger than usual. When planted out, however, it forms a small, healthy-looking, compact mass, of from nine inches to a foot high, sufficiently furnished with neat dark green leaves, and studded all over with blossoms, which, in the open air, assume a degree of brilliancy which is not found in the stove-grown plants. In fact, it is proved to be one of those half-hardy suffruticose plants which are adapted for bedding out in the flower-garden during the summer months, in warm dry situations ; and as far as present experience goes (but two plants having been so treated by Mr. Smith,) it is likely to become exceedingly useful for this purpose, being of close compact growth, and very prolific of its gay, striking-coloured blossoms.

It will require to be propagated and kept during winter in the same way as Petunias—that is, free from damp and frost. The shelves of a green-house or a dry pit will probably be most suitable. The circumstances under which this plant was raised, and the fact, which has been fully proved, of its succeeding far better out-doors than in a hot-house, seems naturally to suggest the question, Why should not the Mexican Orchids be grown out-doors, or at least entirely in green-houses ? Time will, no doubt, furnish a reply.

The genus *Cuphea* belongs to the natural order *Lythraceæ*, and in the Linnæan arrangement to *Dodecandria Monogynia*.

THE GENISTA.

THE *Genista* is a genus of handsome pea-flowered shrubs, mostly of small growth, but all of them very ornamental. The flowers are principally yellow. The name *Genista* is derived from the Celtic *gen*, a little bush. The species are rather numerous, and, as in most other extensive genera, the external appearance of many of the species is very similar. The genus belongs to the natural order of *Leguminaceæ* ; and to the Linnæan *Monadelphica Decandria*.

Genista aethnensis (the Mount Etna *Genista*) is a hardy, sub-evergreen shrub, of erect, twiggy habit, with a few scattered, simple linear leaves, and yellow flowers, produced in July. It grows four feet high : inhabits the wooded region of Mount Etna, in Sicily.

Genista anglica (the English *Genista*, or Petty Whin) is a small, prostrate, deciduous shrub, with slender, spiny branches, bearing small ovate-lanceolate leaves, and yellow flowers in terminal racemes, produced profusely in May and June. It seldom exceeds a foot in height. Suitable for rocky places, or for wilderness scenery.

Genista anrantica (the Anxantic Genista) is a low diffuse-growing shrub, with simple, ovate, elliptical leaves, and racemes of yellow flowers. It is from Naples. From its trailing habit, and profuseness of flowering, it is suited for rockwork.

Genista aphylla (the leafless Genista).—An upright-growing deciduous shrub, with few linear leaves, and violaceous coloured flowers, in long terminal racemes. It grows three or four feet high, and flowers in July, and is from the deserts of Siberia, about the Volga.

Genista angulata (the angular-branched Genista) is a shrub growing from two to three feet high, with simple trifoliolate leaves, and yellow flowers, produced in June. From the woods of Maryland.

Genista candicans (the whitish Genista) is an evergreen shrub of four or five feet in height, which it attains rapidly after planting. It has trifoliolate leaves and yellow flowers. Native of Mogadore, Italy, and the Levant. Flowers from April to July. This, and the other larger growing of the Genistas, are well adapted for planting in newly made shrubberies and plantations, where immediate effect is an object.

Genista cinerea (the grayish Genista) is an erect, branchy shrub, from three to six feet high, with lanceolate leaves and sessile yellow flowers, produced in June and July. Native of hills and mountains in the south of Europe.

Genista diffusa (the diffuse-growing Genista) is a procumbent shrub, with lanceolate leaves and yellow flowers, flowering in May and June. The branches are three-angled.

Genista ephedröides (the Ephedra-like Genista) is a low shrub, not exceeding two feet high, with rigid branches, linear leaflets, and spikes of yellow flowers. Inhabits the coast of Sardinia. It blooms in June.

Genista florida (the florid Genista) is an erect growing shrub, reaching four feet high, with lanceolate leaves, and bearing yellow flowers in August. Native of south of Europe.

Genista germanica (the German Genista) is a spiny shrub of two or three feet high, with lanceolate leaves, and yellow flowers in June, July, and August. Native of Europe. Suited for rock-work. A variety called *inermis* is almost spineless.

Genista hispanica (the Spanish Genista) is a spiny under-shrub, from six inches to a foot high, with lance-shaped leaves, and yellow flowers in June and July. Native of Spain and the south of France. Suitable for rock-work.

Genista horrida (the horrid Genista) has an angular spiny stem, four feet high, trifoliolate leaves, and bears yellow flowers from May to July. Native of the Pyrenees.

Genista humifusa (the trailing Genista) is

a low trailing shrub, suitable for rock-work; it has linear-lanceolate leaves, and solitary axillary yellow flowers, produced in May and June. From the Levant.

Genista lusitanica (the Portugal Genista) is a very spiny branching shrub, with trifoliolate leaves, and terminal yellow flowers from March to May. It grows four feet high, and is a native of Portugal.

Genista mantica (the Mantuan Genista) is a prostrate shrub with linear leaves, and yellow flowers borne from June to August. A native of the woods of Italy.

Genista ovata (the ovate-leaved Genista) is an erect-growing shrub, from two to four feet high, with ovate-oblong leaves, and yellow flowers from June to August. A native of Slavonia and Hungary.

Genista parviflora (the small-flowered Genista) grows six or eight feet high. It is a deciduous shrub, with trifoliolate leaves, and lengthened terminal racemes of yellow flowers from May to August. A native of the Levant.

Genista patens (the spreading Genista) grows from four to eight feet high, with trifoliolate leaves, and yellow flowers, from April to July. Native of Spain.

Genista patula (the spreading Genista) has linear-lanceolate leaves, and yellow flowers, produced from June to August. Introduced from the hills of Tauria; grows four feet high.

Genista pilocarpa (the hairy-fruited Genista) is an erect shrub from two to three feet high. It has lanceolate leaves, and racemose yellow flowers, borne in June and July.

Genista pilosa (the hairy Genista) is a compact procumbent shrub, with obovate-lanceolate leaves, and axillary yellow flowers. A native of Europe; it flowers in May and June.

Genista polygalæfolia (the milk-wort leaved Genista) is an erect shrub, of four feet in height, with lanceolate leaves, and yellow flowers, borne from June to August. Found in Spain and Portugal.

Genista procumbens (the procumbent Genista) is a procumbent shrub with lanceolate leaves, and axillary yellow flowers in threes. Native of Hungary and Moravia; and flowers from June to August.

Genista prostrata (the prostrate Genista) is a diffuse procumbent shrub, with ovate-oblong leaves, and axillary yellow flowers in May and June. A native of Burgundy and the Alps of Jura.

Genista purgans (the purging Genista) is an upright plant from three to six feet high, leaves few, lanceolate; flowers solitary, pale yellow, in June and July. From the hills of France.

Genista radiata (the rayed-branched Genista) is an erect shrub, three or four feet high, with branches grouped in a singular rayed manner. The leaves are narrow, trifoliate; flowers yellow, in terminal heads, borne in June and July. Native of Italy and Carniola. This is a singular looking shrub at all seasons.

Genista sagittalis (the arrow-jointed Genista) is a prostrate evergreen shrub, seldom exceeding six inches in height. The branches are flattened, or two-edged; the leaves ovate-lanceolate, and the yellow flowers in an ovate terminal spike. Flowers in May and June, and is a very distinct and ornamental plant. Native of the mountains of continental Europe. There is a smaller variety which is called *minus*.

Genista scariosa (the scarious-leaved Genista) is an erect shrub, with lanceolate leaves, flowering in June and July. The flowers are yellow. Introduced from Naples.

Genista Scorpius (the scorpion Genista) is a dwarf, spiny, almost leafless shrub. The few leaves are oblong; the flowers yellow, in March and April. Native of the south of Europe.

Genista sericea (the silky Genista) is a decumbent shrub, not exceeding six inches in height, with linear-lanceolate leaves, and yellow flowers in a terminal raceme, produced in May and June. A native of Austria.

Genista sibirica (the Siberian Genista) is an erect shrub, growing six feet high, and producing its yellow flowers from June till August. It is very near *G. tinctoria*.

Genista sylvestris (the wood Genista) grows two feet high, with spiny branches, linear leaves, and terminal racemes of yellow flowers. Native of the hills of Carniola and Croatia.

Genista tetragona (the quadrangular Genista) is a decumbent shrub, with lanceolate leaves and yellow flowers in July. Native of the south of Podolia.

Genista thyrsoflora (the thyrse-flowered Genista) is an upright-growing shrub, in the way of *G. tinctoria*, with lanceolate leaves, and the lateral branches furnished each with a terminal cluster of flowers, which are bright yellow, and are produced in August. It grows about two feet or three feet high.

Genista tinctoria (the dyer's Broom, or Green Weed) is a creeping-rooted, low shrub, with upright stems, lanceolate leaves, and racemes of yellow flowers. It is common in Europe, flowering in July. All parts of this plant furnish a yellow dye. There are four varieties, *latifolia*, *hirsuta*, *pratensis*, and a double-flowered one called *flore-pleno*.

Genista triacanthos (the three-spined Genista) is a low shrub, from two to three feet

high, with trifoliate leaves, and terminal racemes of yellow flowers from May to July. Native of Portugal. A variety found wild about Tangier is called *interrupta*.

Genista triangularis (the triangular-stemmed Genista) is a low shrub, with three-angled branches, lanceolate leaves, and axillary yellow flowers borne in June. It seldom exceeds a foot in height. Native of Hungary. Very near *G. triquetra*.

Genista triquetra (the triangular-stemmed Genista) is a low trailing shrub, with trifoliate leaves, and short terminal racemes of yellow flowers, from April to July. It is a native of the south of Europe. Its somewhat winged green stems give it the appearance of being evergreen. It is a fine plant for rock-work.

Genista umbellata (the umbel-flowered Genista) grows from one to two feet high, with trifoliate leaves, and terminal heads of flowers, which are yellow, and produced from April to June. It is from Barbary. A variety called *capitata* is from Mogadore. This is rather tender.

There are three positions and characters in which the different species of Genista may be introduced with good effect: the positions or characters referred to, are as standards, as rock-plants, and for the front parts of mixed shrubberies. All the upright-growing species which attain to any height—say above two feet, may be planted in the latter situation; and they will grow freely enough in any common garden soil, requiring only the ordinary care which plants in general have a right to look for at the hands of the cultivator; that is, to have the soil prepared, the roots properly laid out, support given after planting, if found necessary, and water administered in dry weather, at least until the plants are once fairly established. The only other condition necessary is to prevent other shrubs from crowding upon and overpowering them. Being of rather rapid growth, they are sometimes liable to become thin at the bottom, and to remedy this, the branches should be cut back, when any tendency to extreme growth is perceived; indeed, an annual pruning of the longest of the shoots will be found to be desirable, as a means of keeping the plants within proper bounds. This pruning should be reserved till the spring months, as the winter frosts may chance to kill back the shoots of some of the least hardy kinds, and this will probably, in such cases, be found to be pruning sufficient to effect the object in view.

For rock-work, all the dwarf-growing upright kinds, as well as the trailing and decumbent species, are particularly appropriate. In fact, though, strictly speaking, they are mostly deciduous, yet their numerous, green, and in

many cases, winged stems, have an evergreen appearance, and serve to relieve much of that aspect of barrenness which such situations, except they are furnished with perennial verdure, are generally found to have assumed in the winter. In the spring and summer, when in bloom, they are highly ornamental, decked with a profusion of their golden-coloured blossoms. On the whole, the species of *Genista*, having the characters just referred to, may be regarded as just the very kind of plants that are adapted for rock-work on a large scale.

The other point referred to was the cultivation of some of the decumbent species, as "fancy" ornamental standard plants, worked at the top of a clear, straight stem, three, four, or five feet high. Such plants are singular and beautiful, and there are few places where an appropriate situation could not be found for one or two of these plants. It is only the prostrate or decumbent kind to which this refers; such kinds, when so treated, assume the character of dwarf standard plants, with drooping, or, as commonly expressed, "weeping" branches. At all times, even when destitute of bloom, or even of leaves, the plants have a singular and interesting appearance, and when in flower they are exceedingly beautiful. The Laburnum, a closely allied plant, is generally chosen, as the stock on which the other kinds are engrafted, either by the process of budding in the summer season, or, more frequently, by ordinary grafting in the spring; the stocks are selected when about an inch in diameter at the height required, and the process of engrafting them is the same as that practised in ordinary cases with other plants. Such plants, as the grafted shoots progress, require to have them disposed at first in such a manner as to form an even and well-balanced head; and unless this is attended to they will frequently grow one-sided and deformed, a condition quite inimical to the beauty the plant is capable of being made to exhibit. These grafted plants seldom require any pruning, except it be to remove a branch where they may chance to be crowded, to shorten back any that may be growing too strongly to the disadvantage of the rest, or to take away dead branches.

The soil preferred by these plants generally is a sandy loam; and they grow best in situations which are rather dry and elevated than otherwise; this is especially the case with those which, from their trailing habit, are recommended for being grown on rock-work. On the same principle, the *Genistas* are a family of plants which grow and bloom in the greatest perfection in summers that are dry rather than otherwise.

THE RHAMNUS, OR BUCKTHORN.

The generic name *Rhamnus*, is according to some authors derived from the Celtic word *ram*, signifying a tuft of branches; this word the Greeks have changed to *rhamnos*, and the Latins to *ramus*. It is an extensive genus, consisting chiefly of hardy shrubs, of which some are deciduous, and other evergreen. There are, however, some few green-house and hot-house species which are omitted altogether in this notice. Among these plants we have the *Alaternus*, one of the most desirable evergreen shrubs we possess. The flowers of all the species are altogether insignificant. The berries of several afford a valuable material for dyeing, and this is the case also with the bark of some species. *Rhamnus* belongs to the natural order *Rhamnaceæ*; and to the Linnaean *Pentandria Monogynia*.

Rhamnus alaternus (the *Alaternus*) is a handsome evergreen shrub, of which there are several varieties in cultivation, all very desirable plants. This species assumes the character of a densely branched bush, unless moulded to some other form by artificial means. In sheltered situations it attains the height of fifteen or even twenty feet, and is met with of almost every size and height below this. The leaves are ovate-elliptical, quite smooth, and firm, with serrated edges in most of the varieties: they are situated alternately on the stem, that is, first on one side then on another, and so on, by which these plants may readily be distinguished from the *Phillyrea*, with which they are often confused. This species is a native of the south of Europe, and the north of Africa; and has been cultivated in this country for upwards of two centuries. It is one of the plants which formerly, in the days of geometrical gardens, and architectural or zoological trees, were clipped into the forms of birds, or beasts, or any other form the fancy of the operator might choose. In the present day, beauty is more easily seen in its natural garb.

The varieties of *Alaternus* are:—*balearica* (the Balearic *Alaternus*) with roundish leaves; *hispanica* (the Spanish) with ovate-toothed leaves: *foliis maculatis* (the gold-blotched leaved); *foliis aureis*, (the gold-edged leaved); *foliis argenteis* (the silver-edged leaved) a very ornamental kind, but rather tender, and highly deserving a situation against a wall; and *angustifolia* (the narrow-leaved) of which there are two subvarieties, with gold and silver striped leaves.

Rhamnus alnifolius (the alder-leaved Buckthorn) is an erect deciduous shrub, growing to the height of eight feet. It has obovate or ovate leaves, and was introduced from North America.

Rhamnus alpinus (the Alpine Buckthorn) is a small erect-growing deciduous shrub, with oval lanceolate, crenate-serrated leaves, which are curiously twisted. It grows six or eight feet in height, and is from the Alps of Switzerland, Dauphiné, and Carniola.

Rhamnus amygdalinus (the almond-like Buckthorn), not yet introduced, is a dwarf species, growing in the north of Africa; it grows in the fissures of rocks.

Rhamnus buxifolius (the box-leaved Buckthorn) is a deciduous shrub, allied to *R. oleoides*. It has ovate, smooth, entire leaves, and grows to the height of three feet.

Rhamnus carolinianus (the Carolina Buckthorn) is an erect shrub, of deciduous habit, with oval, oblong, entire smooth leaves. It attains six feet in height, and is found in the woods and swamps of Virginia and Carolina.

Rhamnus catharticus (the purging Buckthorn) grows twelve or fifteen feet high, assuming the character of a large deciduous shrub, or low tree, with somewhat spiny branches. The leaves are ovate, toothed, and of a bright green colour. The flowers are inconspicuous, but they are succeeded by numerous black berries, which are ornamental in the winter season: these berries are nauseous and violently purgative; when unripe their juice has the colour of saffron, and is used for staining maps or paper; the juice of the ripe berries mixed with alum is the sap-green of painters, but if they are too ripe the juice is purple. The bark affords a beautiful yellow dye; and the inner layers have a purgative property. This species is adapted, from its rigid habit of growth and robust character, for forming hedges; and there is no doubt that plants could be reared and supplied with at least as much facility as those of the common hawthorn. It is found in Britain, generally on calcareous and loamy soils, and is a native of other parts of Europe, and the north of Asia. A variety with larger leaves, tapering to the base, found about Hydria, is named *hydriensis*.

Rhamnus dahuricus (the Dahurian Buckthorn) is an erect deciduous shrub, growing five feet in height. The leaves are oblong-oval, with serrated margins, and a smooth surface. It is found near the river Arguinus, in Dahuria. The berries are black: the wood is red, and is called sandal-wood by the Russians.

Rhamnus erythroxylon (the red-wooded Buckthorn) grows to the height of six feet, in rocky and gravelly places, near the rivers of Mongolia and Siberia. It is an erect-growing deciduous shrub, with linear-lanceolate, serrated, smooth leaves. It prefers warm situations. The wood, which is very hard and

red, is used by the Mongols for making their images: the berries afford a yellow colour. A variety from Caucasus, with smaller narrow leaves, is called *angustissimus*.

Rhamnus frangula (the brittle Buckthorn, or berry bearing Alder) is a deciduous shrub or low tree, growing ten or twelve feet high. The leaves are oval and quite entire. The berries, which are dark purple, are used by the Russians for dyeing yellow; and the bark dyes yellow, and, with a preparation of iron, black. Both the berries and the bark are purgative. The unripe berries dye wool green and yellow; the ripe ones blue-gray, blue, and green. Bees are very fond of the flowers; and the charcoal prepared from the wood is preferred to any other by the manufacturers of gunpowder. A variety called *angustifolia*, has narrower leaves.

Rhamnus franguloides (the frangula-like Buckthorn), has oval serrated leaves. It is a deciduous shrub, a native of North America, growing eight or ten feet in height.

Rhamnus hybridus (the hybrid Alaternus) is a garden production between *R. alpinus* and *R. Alaternus*. It is a desirable sub-evergreen, growing ten or twelve feet high, with oblong acuminate, serrated, shining leaves, which are hardly permanent enough to rank it as a true evergreen.

Rhamnus infectorius (the staining Buckthorn, or Avignon berry) is a deciduous, almost procumbent shrub, with ovate-lanceolate, serrated, smoothish leaves, native of rocky places, in the south of Europe; the roots fix themselves so firmly on the rocks that it is difficult to remove them. The berries are black, and are used for dyeing yellow. The yellow morocco leather is supposed to be coloured with them.

Rhamnus latifolius (the broad-leaved Buckthorn) is a fine growing deciduous shrub, or low tree, growing fifteen feet high, and upwards. The leaves are large, elliptical, acuminate, quite entire; and the plant is remarkable for its robust appearance. It is a native of the Azores and the mountains of St. Michael.

Rhamnus longifolius (the long-leaved Buckthorn) has oval-oblong leaves, acute at both ends, serrated, smooth, and shining. It is a deciduous shrub, growing eight feet high.

Rhamnus lycioides (the Lycium-like Buckthorn) is a deciduous shrub, of three or four feet high, growing naturally on the limestone hills of Valencia. The leaves are linear, quite entire, obtuse and smooth. A variety found in Arragon has the leaves yellowish; it is called *arraganensis*.

Rhamnus oleoides (the olive-like Buckthorn) grows in the fissures of rocks in Sicily, Mauritania, and other places. It is a deciduous

shrub, of diffuse habit, with oblong, obtuse, entire, smooth leaves.

Rhamnus pubescens (the pubescent Buckthorn) is a diffuse growing deciduous shrub, attaining three feet in height, and a native of the south of France, and the Levant.

Rhamnus pumilus (the dwarf Buckthorn) is a procumbent plant, with ovate, serrated, smooth leaves. It is deciduous, and grows in the fissures of rocks, in Mount Baldo, in the Alps, and in Carniola.

Rhamnus pusillus (the small Buckthorn) is a procumbent deciduous shrub, with obovate acute leaves. Native of Naples.

Rhamnus Purshianus, (Pursh's Buckthorn) not yet introduced, is a deciduous shrub, with broadly oval leaves, growing six feet high, and a native of North America.

Rhamnus rupestris (the rock Buckthorn) is a procumbent deciduous shrub, with ovate, entire, smooth leaves. It is a native of Dauphiné, on rocks.

Rhamnus saxatilis (the stone Buckthorn) is a procumbent, or somewhat erect deciduous shrub, with ovate-lanceolate leaves. The berries are black, and are supposed to be used for dyeing purposes. This is a native of the south of Europe, among rocks; and both it and *R. infectorius* are adapted for planting among rocks in garden scenery, whether natural or artificial.

Rhamnus tinctorius (the dyer's Buckthorn) is an erect deciduous shrub, with ovate, crenate-serrated leaves: it grows to the height of eight feet. Native of Hungary. The berries and inner bark are used for dyeing.

Rhamnus valentinus (the Valencia Buckthorn) is a procumbent deciduous shrub, from the mountains of Valencia. It has roundish, elliptical, crenated leaves.

Rhamnus virgatus (the twiggy Buckthorn) a deciduous, erect-growing shrub, with spiny branches, and oblong serrated leaves. It is from the Neelgherry mountains in the Himalayas, and grows ten or twelve feet high.

Rhamnus Wulfeni (Wulfen's Buckthorn) is a sub-procumbent deciduous shrub, with orbicular leaves, growing two or three feet in height. Native of Austria.

There are several other species known to botanists, some of which are no doubt hardy.

Of the foregoing, the evergreen species, *R. Alaternus* and its varieties, are by far the most useful and ornamental for all gardening purposes. These evergreen kinds are raised chiefly from layers and cuttings, which root readily, and grow in any ordinary garden soil with the greatest freedom. When quite young, the plants require a slight protection afforded to the roots in winter, and this is easily secured to them by covering the soil about them, five or six inches in thickness,

with tree-leaves, or long loose litter. While young, and until finally planted where they are to remain, they should be frequently transplanted, in order to check over luxuriance of growth, and to increase the number of fibrous roots. Once in two years will, however, be sufficiently frequent in ordinary cases; if very rapid growth is observed, it may be done at the end of a year. Sometimes they are kept in pots, with a view to render the operation of transplanting them more safe in the case of large plants, but this practice is not to be recommended to secure fine plants; for when the roots have been circumscribed within the limits of a garden-pot, they become matted together in this form, from which it is impossible to free them at the time of planting out, and consequently the energies of the plant are to a certain extent, and especially for a season or two, very much crippled. What is preferable where it *can* be so arranged, is to finally plant out at as early a period of the plant's existence as may be practicable, or when only a year or two old. The plants naturally grow thick and bushy, and the only pruning they require is the occasional shortening back of a stray shoot, that may be growing so freely as to threaten the symmetry of the individual: the pruning should, however, neither be so severe or regular as to induce formality. The plants are sometimes injured by severe winters, though when they become established they rarely suffer much; and in cases where any injury is sustained, the stem generally sprouts out again with vigour and freedom. The other species, which are propagated extensively either by layers or by seeds, require no particular course of treatment: the seeds grow freely enough when sown in the ordinary way in which seeds are sown; the layers root freely if that operation is done as is usual; and the plants progress freely enough when planted in the ordinary soil of gardens, in the manner in which such operations are ordinarily performed. The only condition as regards the nature of the soil which seems to be necessary, is that it should be either naturally or artificially free from an abundance of moisture.

All the procumbent growing species, and those which approach that habit, are particularly adapted for being planted on rough, uneven, or rocky situations, whether natural or artificial. In fact, such situations require plants of this character to be studded about them, to bring out their full effect.

THE NEW ZEALAND SPINACH.

The New Zealand Spinach (*Tetragonia expansa*), was discovered in that island, during Captain Cook's first voyage, and great benefit was derived by his crew from using it as

an esculent. It has been also found in the Society Islands, and in Japan; and was introduced to this country in 1772. It attracted no notice as a vegetable in Europe until about 1819, when an account of it was published at Paris, and about 1821 it was grown in England, as a substitute for spinach in the summer, to which it is preferred by many, as possessing a superior flavour, and being more tender than spinach can be grown at that season without very great trouble.

The seeds should be sown about the middle of March, singly in small pots, and placed in a cucumber frame, or similar situation, until they attain some size, taking care not to draw the plants up weak. As they advance they should be shifted once or twice into larger pots, and be gradually inured to the open air, so that by the end of May, they may be turned out into a rich warm border, at least six feet plant from plant. As soon as the roots lay hold of the soil their growth will be very rapid, and they will soon cover all the ground allotted to them. In dry weather they should have copious supplies of water, which will greatly increase the succulency of the leaves, although the plant will flourish in very dry places during the hottest summer, and in such situations produce the greatest abundance of seed. When first cultivated it was usual to ridge them out, almost in the same way as cucumbers, but this is not at all necessary, as where once grown, plants generally spring up during the following summer, and if a few be allowed to stand they will succeed the crop raised as above directed, furnishing larger and more succulent leaves, when the first are partially exhausted. Occasional watering and keeping down weeds is all the attention the plants require after they are fairly established. In gathering the leaves, they should be pinched off singly, taking care not to damage the tops of the leading branches until the ground is well covered; but when that is the case the quickest way is to nip off the points of the young shoots about two inches long. They will be quickly succeeded by other crops as long as the weather continues warm enough for the plant to flourish, which is generally until after the frost has destroyed such plants as gourds and nasturtiums. From four to twelve plants will be found to yield a sufficient crop for most families; twenty would supply the largest establishments.

CLIMATE, HORTICULTURE, AND AGRICULTURE.

It has been thought by many persons, that there was little or no difference between these kindred sciences, or at least that it was difficult to draw the line of demarcation at which

one commences and the other ends. It cannot be found in the crops produced, because, although wheat, barley, and other grain, cannot be said to belong to Horticulture, and pine apples and grapes belong not to Agriculture, yet these are subjects upon which there can be no mistake, only because they are so far removed from the line which separates them: turnips and carrots are as much connected with one as with the other; so also are other crops, which are as much belonging to the garden as the field. Looking then to the best mode of describing the difference, we should say that Agriculture is dependent on climate, and Horticulture independent of climate. The one has to produce crops in the open air, without protection, and in their season; the other is the art or science of producing crops by various means, and out of season. Mr. Daniell once having to define the two branches clearly, in a paper written at the request of the Secretary of the Horticultural Society, said:—

“Horticulture differs from Agriculture in one very material respect. The latter has for its object the fertilization of the soil by manures, and the different processes of cultivation, in the manner best adapted to the peculiarities of any given climate: it concerns itself only with the growth and nourishment of such plants as are indigenous, or, by a long course of treatment, have become inured to the vicissitudes of weather incidental to a particular latitude. The former occupies a much wider field of research; it not only seeks to be conversant with the constitution of soils, but, as it aspires to the preservation and propagation of exotic vegetation, it necessarily embraces the consideration of varieties of climate; and it labours, by art, to assimilate the confined space of its operations to that constitution of atmosphere which is most congenial to its charge, or to protect them at different periods of their growth from sudden changes of weather, which would be detrimental to their health. *Experience has anticipated theoretical knowledge in suggesting various artifices, by which these ends may be effected*; a connected view of which has never, I believe, been attempted; but may prove to be not without interest and utility. The suggestions of experience may probably *enlarge the conclusions of theory*, while it is not impossible that *the improved state of the latter, may be found to furnish some assistance to the former.*”

We are not quite sure that we shall go the length of this with Mr. Daniell, for we have great doubt whether theory is in an improved state, and also, whether it has in any degree assisted, or is calculated to assist the experience which has anticipated theoretical

knowledge. Nay, we are unwilling to admit that any such terms as theoretical knowledge can be applied properly to anything. If theory be based on experience, it is theory, but the knowledge is practical. However, we must proceed with our subject without disputing upon mere words; we make this one objection at the outset, because we prefer to start on a fair and proper foundation, and not begin building our house downwards; and as we intend to give Mr. Daniell the credit of much that he has written, though we cannot agree with all. He observes further—

“The science of Horticulture, with regard to climate, will be best considered in two divisions: the first comprises the methods of mitigating the extremes, or exalting the energies, of the natural climate in the open air; the second embraces the more difficult means of composing and maintaining a confined atmosphere, whose properties may assimilate with those of the natural atmosphere in inter-tropical latitudes. I shall commence my observations with the former.

“The basis of the atmosphere has been proved to be of the same chemical composition in all the regions of the globe. All the varieties of climate will therefore be found to depend upon the modifications impressed upon it by light, heat, and moisture, and over these, art has obtained, even in the open air, a greater influence than at first sight would appear to be possible. By judicious management the climate of our gardens is rendered congenial to the luxurious productions of more favoured regions, and flowers and fruits from the confines of the tropics, flourishing in the open air, daily prove the triumphs of knowledge and industry.”

Here again we are disposed to question the application of the term “open air.” The gardener accomplishes his task by changing the nature of the atmosphere, so that, strictly speaking, Mr. Daniell is wrong. The productions on a south border, under a south wall, are not in the open air; the wall itself is an obstruction to the open air, for if the wall were not present, the north wind would blow on the productions, and it would be easily seen that those plants which flourish when protected against the north wind, would be destroyed in the open air. It is this silly blunder which has led many into the error of supposing that a plant is acclimatized, when it is only the temperature of the situation that is changed.

In horticulture we have constant directions to “sow in a warm border,” to plant “in a well protected spot,” “to cover up from frost,” and so on. Horticulture is a science the very elements of which teach us to counter-act the effects of the open air, and that cannot

be called allowing plants to flourish in the open air. It is true, we know what it means; but, in treating of these subjects, we cannot be too precise, because the whole gist of the question turns upon the one great fact, that the Horticulturist's business is to defeat the mischief which plants would be subject to if they were really placed in the open air, or, as Mr. Daniell says, very truly, of the labours of the gardener, “By judicious management the climate of our garden is rendered congenial to the luxurious productions of more favoured regions;” but the farmer, who really grows his productions in the open air, follows the gardener in all his operations but the changing of the climate, and he would now find the difference between the mercy of the “four winds of heaven,” and the advantage of shutting out the north and the east, and relying on the genial breezes of the south and west only. If the open air means anything, or the term expresses anything, it must be the free uninterrupted air; and all the farmer's or agriculturist's science is comprised in making the most of his productions under such circumstances; and his agriculture is not carried on under south walls, hedges, or palings, that change the climate; and the consequence is, that all his productions must be so far hardy as to require no artificial means to check the winds. His field is an open space, and all his labour and science must be concentrated in the management of the soil, and the regulation of his seasons of sowing, clearing, mowing, draining, and operations on the soil itself. The horticulturist keeps off the winds that are injurious, the sun where it is too hot, the rain where it is in excess. To follow Mr. Daniell through some of his more scientific reasoning:—

“The amount of evaporation from the soil, and of exhalation from the foliage of the vegetable kingdom, depends upon two circumstances, the saturation of the air with moisture, and the velocity of its motion. They are in inverse proportion to the former, and in direct proportion to the latter.

“When the air is dry, vapour ascends in it with great rapidity, from every surface capable of affording it, and the energy of this action is greatly promoted by wind, which removes it from the exhaling body as fast as it is formed, and prevents that accumulation which would otherwise arrest the process.

“Over the state of saturation, the Horticulturist has little or no control in the open air, but over its velocity he has some command. He can break the force of the blast by artificial means, such as walls, palings, hedges, or other screens; or he may find natural shelter in situations upon the acclivities of hills.

Excessive exhalation is very injurious to many of the processes of vegetation, and no small proportion of what is commonly called *blight*, may be attributed to this cause. Evaporation increases in a prodigiously rapid ratio with the velocity of the wind, and any thing which retards the motion of the latter, is very efficacious in diminishing the amount of the former; the same surface, which in a calm state of the air would exhale 100 parts of moisture, would yield 125 in a moderate breeze, and 150 in a high wind. The dryness of the atmosphere in spring renders the effect most injurious to the tender shoots of this season of the year, and the easterly winds especially are most to be opposed in their course. The moisture of the air flowing from any point between N. E. and S. E. inclusive, is to that of the air from the other quarter of the compass, in the proportion of 814 to 907 upon an average of the whole year: and it is no uncommon thing in spring for the dew-point to be more than 20 degrees below the temperature of the atmosphere in the shade, and I have even seen the difference amount to 30 degrees. The effect of such a degree of dryness is parching in the extreme, and if accompanied with wind is destructive to the blossoms of tender plants. *The use of high walls, especially upon the northern and eastern sides of a garden, in checking this evil, cannot be doubtful, and in the case of tender fruit trees, such screens should not be too far apart.*"

Here we have the horticulturist's business pointed out very clearly, in a manner which defines the science. It is the business of theorists to reconcile, as well as they can, our facts to their theories, and horticulturists may profit by inquiring to a certain extent into the causes of well known effects; but, were practical men to attempt to go beyond certain points, they would utterly waste three-fourths of their time in seeking that which, when obtained, would not be worth the having. They may know that cuttings strike best when shaded from the sun and protected from the wind, and some would be content without going further. If they were content with learning that the sun and wind would cause excessive evaporation, and deprive the cuttings of the juices they possess while they had no means of obtaining a fresh supply, the knowledge would be useful; but if they attempted to follow the philosophers through a thousand intricacies, they would have to sacrifice much valuable time for knowledge to them under every circumstance useless, and follow an *ignis fatuus* which would take them from their business into a labyrinth from which they would hardly be able to extricate themselves. The practical horticulturist may wisely study

the locality of plants, that he may be able to supply that which he knows will suit them; but he must no more attempt to imitate nature as the perfection of treatment, than he must treat the rose after the fashion of the hardships they undergo in the hedges. The plant which comes from the tropics may safely be supplied with a climate as nearly as possible similar, because the gardener knows it to be at least a safe one, but he has then only half done his work. He must learn to treat it in the best way, and that may be very different from that which nature supplies even at the tropics.

In this country the fruits of hot climates are produced, notwithstanding all the natural disadvantages we have to contend with as to our climate, in perfection, and that is more than can be said of the very locality from which they are imported; and if it be a fruit not artificially or regularly cultivated at home, that is, where it is indigenous, they will be produced much finer; but if the horticulturist in the West Indies cultivates the pine apple with the care which is bestowed on it in this country, he will have one advantage naturally, which we have to imitate; nevertheless, the pine apple grown in perfection in England, far surpasses in richness of flavour the pine apple grown in the fields of the West Indies; experiment, the mother of improvement, and perseverance, the harbinger of success, accomplish much that nature unaided, even where plants are indigenous, never did achieve; and we have a hundred times seen and eaten the grape in higher perfection in England, than it ever arrived at in its native soil and climate. Plant a heath in the very best locality of the Cape, and is there a practical gardener who will venture to dispute that we can fairly beat it in England? We write not of hybridizing nor a change of races, for the same thing might be done at Botany Bay, but we allude to the fair growth of a known indigenous species or variety. Larger plants may be found, and are found, like our great bushes of furze, blooming in all their beauty and growing luxuriantly; but they are, in respect to age, Methuselahs to our youthful specimens; and we seriously doubt, if expense was no object, whether there is a single valuable production that might not be grown in Great Britain, in perfection. We know we are limited for sun and light, we know that many of the apparent requisites, if we are to judge by the countries they have left, are wanting, yet we know also that the cost is the only limit to the production of a thousand gigantic subjects, which rear their heads in tropical forests. It is in the supply of all these requisites by artificial means, or of something equivalent to them, that the British horticulturist shines;

and it is the modification of soils, and climate, and conditions, which forms the science, and occupies the skill of horticulturists. The agriculturist's business is to make the most of the climate and soil we have; he may drain and dress his land a hundred ways to improve the soil, but as his business lies in the open air alone, unprotected and unassisted by artificial means, his crops must stand the weather; his seasons are regulated by the climate, which he has no means of changing or modifying. The line, then, between agriculturists and horticulturists, may be safely drawn where the gardener begins to protect, and that is, in the very walls or fences by which the gardens are surrounded; for there he arrests the north-east wind from those plants which it would injure; and every further protection he uses, is only so many steps towards the higher grades of his art and science. From the simple border, screened from the north and east winds by a wall or fence, to the highly heated stove, he supplies any degree of heat; moisture is as easily supplied as heat, and where he cannot find sufficient light to agree with the heat a plant should have, his skill teaches him to moderate them, that the conditions may be a match for each other; nor is he at a loss, when the sun is too powerful, for the other attendant conditions, for then he interposes his shades of different degrees, to carry out his intentions. We have already said that the climate of a garden is altered by the very walls that enclose it, at least all that portion which is protected against the north-east winds. Mr. Daniell thus describes what may be effected by these means, even to an extent not often practised; for after describing the effect of radiation, in producing cold when unchecked, he says:—

“The most perfect combination for the growth of exotic fruits in the open air would be a number of parallel walls, within a short distance of one another, facing the south-east quarter of the heavens; the space between each should be gravelled, except a narrow border on each side, which should be kept free from weeds and other short vegetables. On the southern sides of these walls, peaches, nectarines, figs, &c., might be trained to advantage, and on their northern sides, many hardier kinds of fruit would be very advantageously situated. Tender exotic trees would thus derive all the benefit of the early morning sun, which would at the earliest moment dissipate the greatest accumulation of cold which immediately precedes its rise; and the injurious influence of nocturnal radiation would be almost entirely prevented. Upon trees so trained, the absolute perpendicular impression could have little effect, and this little might even be prevented by a moderate coping.

Mats, or canvass upon rollers, to draw down occasionally in front of the trees, at the distance of a foot or two from their foliage, would, I have no doubt, be a great advantage in certain dry states of the atmosphere before alluded to, and in the case of walls which are not opposed to others, would be a good substitute for the protection of the latter.

“Experience has taught gardeners the advantages of warding off the effects of frost from tender vegetables, by loose straw or other litter, but the system of matting does not appear to be carried to that extent which its simplicity and efficacy would suggest. Neither does the manner of fixing the screen exhibit a proper acquaintance with the principle upon which it is resorted to: it is generally bound tight round the tree which it is required to protect, or nailed in close contact with its foliage.

“Now it should be borne in mind, that the radiation is only transferred from the tree to the mat, and the cold of the latter will be conducted to the former in every point where it touches. Contact should therefore be prevented by hoops or other means properly applied, and the stratum of air which is enclosed will by its low conducting power effectually secure the plant. With their foliage thus protected, and their roots well covered with litter, many evergreens might doubtless be brought to survive the rigour of our winters, which are now confined to the stunted growth of the green house and conservatory.”

The point at which we shall close these remarks, having been reached, we think we may fairly say that agriculture means the culture of things in the free open air and natural climate, and that horticulture expresses that science which, among its first objects, ranks that of altering the climate.

JOHNSON'S DICTIONARY OF MODERN GARDENING.*

WE approach a work of this kind with a presentiment that we shall find little more than we have already seen in other works, and discover but a small portion of original thought or novel matter; nevertheless, some of the most useful of our works are compilations, and therefore, so that we are favoured with a good selection of useful information, no matter how or where obtained, the purpose of a dictionary seems to have been answered. It is impossible to deny that a great mass of valuable information is scattered

* A Dictionary of Modern Gardening, by George William Johnson, Esq. F.H.S.I. C.M.R.C.M.H.S. author of the Principles of Practical Gardening, the Gardener's Almanack, &c. London: Baldwin, Paternoster Row; 1846.

through hundreds of books not often attainable by the majority of amateur and professional gardeners, and whoever will take the trouble to select the best from all these unattainable sources, and give it us in a condensed and readable form, does great service; but it too often happens that they do also a great deal of injustice (possibly without intending it); but as in all works of this kind the *best authorities* are professed to have been consulted, it must be evident that a serious injustice is effected in every instance in which any competent authority has been purposely omitted; in every case where such authorities have not been fully and fairly acknowledged; and in every instance in which the strictest impartiality has not been most rigidly observed;—therefore, authors who are so largely indebted to the writings of others as are the compilers of Dictionaries and Cyclopædias, cannot be too particular in such matters.

Mr. Johnson has, certainly, very fully acknowledged those authorities from which *he* has quoted, and, therefore, cannot be charged with any injustice on that account; not so, however, we regret to find, with the other points to which we have referred: for in the very preface he evinces an objectionable disposition to partiality, by lavishing his praises on a few favourite works, while others with which he is equally well acquainted, and to which he is but little less indebted, are altogether unnoticed. As an instance of this, we need only take the gardening newspapers, and of these it will be observed, that the *Gardener's Chronicle*, and the *United Gardener's and Land Steward's Journal*, are thus brought prominently into notice; while the *Gardener's Gazette*, a journal established six years before the one, and three years before the other, is not even named. That this could not have occurred from the author's having any doubt of its value as a practical work, must be evident from his perfect knowledge of the individual who established, and (with but little intermission) has ever since edited that journal, and of whom Mr. Johnson thus speaks:

Page 103, "Mr. Glenny, one of our best judges of florists' flowers," &c.

Page 169, "The soil, says Mr. Glenny, and other first-rate authorities," &c.

Page 537, "Upon this point the same excellent authority," &c.

Page 673, "The best practical information is given by Mr. Glenny," &c.

The very fact of a journal known to have been established and conducted by this person being wholly neglected, while *all* others of the same class are prominently noticed, has very much the appearance of withholding from the public the knowledge that such paper exists,

or, in other words, it has all the appearance of a disposition on the part of the writer to convey to his readers the information that there is a *Gardener's Chronicle*, and a *Gardener's Journal*—and to suppress the fact that there is also the *first Gardening Newspaper* that was established, the *Gardeners' Gazette*. If we turn from the newspapers to the magazines, we find that the *Horticultural Journal*, another work established and edited by the same author, is not once named, although many of the quotations from other journals were originally published in that work. Many instances of this kind we could point out, but that our limits will not admit of many such examples; and, therefore, we will confine ourselves exclusively to those subjects on which Mr. Johnson himself states, (p. 673,) "the best practical information is given by Mr. Glenny," and where, if any where, we should have expected to have found this authority consulted—but no! even here, as far as we have been able to discover, it appears that in almost every instance in which this author's writings have been copied or re-written into other works, Mr. Johnson has quoted the very articles from those works, instead of from the original; so much so, indeed, that even "*The Properties of Flowers*," a series of papers so exclusively his own, are in no single instance quoted from his works, or with his name, if they could be found transcribed into any other works; and accordingly Mr. Johnson has given the Properties of the Pansy, the Auricula, the Carnation, the Polyanthus, the Tulip, &c. &c. from the *Gardener's Chronicle*, notwithstanding every one of them were known to have originated with this writer, and to have been published years before in the several works with which he was connected.

We entirely acquit Mr. Johnson of the wilful intention of perpetrating an injustice in this or any other matter; we respect him as a writer, and we only regret that he has allowed a spirit of favouritism to so far warp his judgment as to influence his selection of authorities, for, most assuredly, his work has suffered in consequence. As an instance of this, we would observe that the Fuchsia, a plant now enjoying everybody's attention, and of which, therefore, of all others, the criterion of a good flower was necessary, is given without that very desirable information: while the Dahlia, the Pelargonium, and the Rose, are but very imperfectly described.

Now, these have all been so fully and so admirably defined, most particularly all the various classes of the Rose, that if our author had only kept faith with his preface, and "consulted the best living authorities," nay, if he had only consulted a good florist, he would have been directed to the right source,

and we should not have been left without this information in the Dictionary.

We make these remarks in no unfriendly spirit, but with the hope that in preparing a second edition Mr. Johnson will, without favour, consult really the best, and in all cases that he can, the original authorities, for it requires but little to render his work a most useful book of reference to all who are engaged in gardening. The arrangement of the Dictionary is good, and the getting together from different authors much of their best writings is after the fashion of the *Encyclopædia of Gardening*; but the alphabetical system is so far superior, that it makes almost the entire difference between useful and useless. Let us quote a bit from the Rose:—

“*Cuttings* are made to succeed by the following treatment:—

“Take a cutting of a this year's shoot, removing all but one leaf, and cutting off the upper part of the shoot above the leaf, and reducing its entire length to six inches. The cutting should be planted on the north side of a wall, under glass in a small frame, on a newly prepared hotbed, and in a soil of leaf-mould, eight inches deep, well soaked with water, and covered over with sand. Water is to be given, and air abundantly, for the first four days, lessening its admission daily, until rooting is completed, which will be in about three weeks. In the fourth week the cutting may be potted.

“*By Suckers.*—Roses send up many suckers annually, which may be taken up in autumn, winter, or early spring, with some rootlets attached; and the strongest may be planted out finally, and the weakest in the nursery for a year or two or longer. They will readily grow, and will most of them produce flowers the following summer.

“When rose-trees have grown into large bushes, with many suckers, the whole may be taken up and slipped, or divided into separate plants. The moss, and some others, furnish suckers but sparingly.

“*By Layers.*—To obtain shoots for layering, a quantity of rose-trees should be planted for stools, which, being headed down low, will throw out shoots abundantly near the ground, in summer, for layering in autumn or winter following. They will be rooted by next autumn, and fit for transplantation in nursery rows; though sometimes the moss-rose and some others require two years before they are tolerably well rooted. But of these sorts you may also try layers of the shoots of the year, layered in summer, any time in June. They will probably root a little the same season. The layers of all the sorts, after being properly rooted, should be taken up in autumn and planted in the nursery, to have one or two years' growth.

“*Soil.*—All the cultivated roses, and especially the double-flowering kinds, require a rich loamy soil, inclining to clay rather than sand; and they require also, like most double flowers, plenty of moisture when in a growing state.

“*Manures.*—The best is a mixture of one part guano, three parts charred turf and earth, and six parts cow-dung. A thin dressing pointed in every spring.

“*Pruning.*—Mr. Glenny gives these very good and full directions:—

“‘Suppose we have a standard, with only one branch from the bud, which is always stronger and better than if there are two or three—the first season we should cut that to within two eyes of the ground, if a rose on its own root, or within two eyes of the stock, if it be a budded one. These two eyes would, the very first year, send out two blooming branches, which would grow a considerable length. The next season we should cut both of these into within two eyes of the short branch they started from; and this would make each of these two branches start out two more; and unless to get the tree, or the dwarf bush, into any particular form, we should never omit cutting down shoots, and often cut out old lumps of wood and branches to thin the tree, which must never get crowded. By the same rule we should always cut away all the spindly shoots. China roses, and all constant bloomers, which require continued attention, should have only the old wood and the weak shoots cut away, because any violent pruning would throw the plant out of flower for a considerable time; while carefully removing the seed-vessels, and taking away weak wood to make room for the stronger, will keep them constantly flowering. This is especially requisite with climbing roses, where the favourable aspect, and other circumstances, may set the seed of almost every bloom. The swelling of their seed-vessels will take all the nourishment from the shoots that would otherwise continue to grow and bear flowers; and the seed will often complete its growth and ripen before there is anything like a general bloom again.’

“‘A very good time for performing the operation is immediately after the bloom is over; cutting out old exhausted wood, shortening shoots which have flowered to a good bud accompanied with a healthy leaf, but leaving such shoots as are still in a growing state untouched till October.

“‘Where very large roses are wanted, all the buds but that on the extreme point of each shoot should be pinched off as soon as they make their appearance, and the plant liberally supplied with water.

"To lessen evaporation, and keep up a constant moisture at the root of their roses, the Paris gardeners generally mulch them with half-rotten stable dung or partially rotten leaves."

"The Banksian Rose must be pruned at no other time, but immediately after it has done blooming in June, or early in July."

"*Planting*.—'On removing trees,' says the author of the *Tree Rose*, "the fresh shoots they have made, and the appearance of those which were left, will require attention in the application of the knife. In pruning a large root it should be cut to a lateral; in shortening a small one, to a fibre. Where a plant has been examined and trimmed recently, however, the knife should be sparingly used."

"And it may here be well to observe, that all cuts to remove branches, knots, or roots, should be quite clean, slanting (and deep enough to the stem, viz. even with it), and nothing left projecting, lest dead wood be the consequence, and the plant be eventually injured. All wounds should be carefully healed, and dead wood should, in all cases, be removed, and living bark encircle that which remains."

"The best time for planting is November."

The matter, if not greatly abridged, is selected from the closest writers, in many cases at least; for instance, the Honeysuckle is generally treated at considerable length, and it is one of those very beautiful subjects which will bear a good deal to be said of it; we select a portion of the Dictionary which includes this, because we think it a fair sample of the manner in which the plants are treated, and we take the few words that follow to give a general notion of the Dictionary.

"*HONEYSUCKLE* (*Lonicera Periclymenum*).—This hardy, beautiful, and fragrant flowering shrub will grow in almost any soil, and will thrive where few others will, under the shade of trees. There are the following subspecies:—

"1. *Periclymenum sempervirens*; perfoliate evergreen; Virginia honeysuckle, which always flowers, commonly called Trumpet honeysuckle.

"2. *Periclymenum racemosum*; honeysuckle with yellowish flowers, growing in bunches, and a snowy fruit.

"3. *Periclymenum verticillatum*, another tree-like honeysuckle, with inflected branches, and a coral-coloured flower.

"4. *Periclymenum germanicum*, the German honeysuckle.

"5. *Periclymenum italicum*, Italian honeysuckle.

"6. *Periclymenum vulgare*; honeysuckle with a corymbus of flower terminating the

stalks, hairy leaves, growing distinct, and very slender branches, commonly called English honeysuckle or woodbine.

"7. *Periclymenum americanum*, the evergreen honeysuckle.

"As to the general culture, they require very little: the upright sorts, in particular, require to have only their straggling shoots shortened, and dead wood cut out; and the trailing kinds, which are trained as climbers, must have their branches conducted in a proper manner upon their respective supports; and every year all rambling shoots must be reduced and trained as you shall see proper, so as to preserve them within due limits; unless you design they shall run wild in their own rural way, especially those intended to climb among the branches of trees, shrubs, and bushes, those also intended and trained annually; laying the shoots along at their length, especially till they have covered the allotted space; shortening or clearing out, however, all such stragglers as cannot be properly trained; likewise such of those sorts as are trained against walls, &c., must have an annual pruning and training, by going over them two or three times in summer, laying in some of the most convenient shoots, some at their length, shortening or retrenching others, as it shall seem necessary to preserve regularity, and the proper succession of flowers; observing, however, to train enough, at this time particularly, of such as shall appear necessary to continue the bloom as long as possible; and in winter pruning, thin out all those left in summer which may now appear superfluous, and shorten all such as are too long for the space allotted for them, especially all those with weak straggling tops; and nail in the remaining branches and shoots close to the wall.

"*Propagation* is effected by layers and cuttings, more particularly the latter, both of which readily emit roots, and form plants in one year, fit to transplant. Some sorts are also propagated by suckers and by seed.

"*By Layers*.—In autumn, winter, or spring, lay a quantity of the lower young shoots of the former summer, shortening their straggling tops; they will be well rooted by the autumn following, each commencing a good plant, and should be taken off, and planted in nursery rows, for a year or two, to acquire proper size and strength for use.

"*By Cuttings*.—Any time from October till March, is the proper time for this work, but the sooner the better, and by which method prodigious quantities of the plants may be raised, as almost every cutting will readily grow.

"Choose of the young shoots of the previous summer, the strongest and most robust, which

divide into cuttings from about six or eight to ten or fifteen inches long, plant them in rows in any shady border of common earth, a foot asunder, and half that distance apart in each row, or closer if great quantities are required, putting of each cutting two parts out of three of its length into the ground; they will take root freely, and shoot at top so as to form proper plants by autumn or winter following, at which time they may be transplanted into the nursery quarters, to have more room to grow, placing them in rows two feet distance, and a foot apart in the rows, where let them remain a year or two, or till wanted for the shrubbery.

"*By Seed*.—If sowed in autumn, in a bed of common mould an inch deep, many of the plants will probably rise in spring; but a great part of them are apt to remain till the second spring before they appear.

"*HONEYWORT. Cerinthe.*

"*HOOP-PETTICOAT. Narcissus Bulbocodium.*

"*HOP-HORNBEAM. Pholopogon.*

"*HOREHOUND. Marrubium.*

"*HORKELIA.* Two species. Hardy herbaceous. Seed and division. Common soil.

"*HORMINUM pyrenaicum.* Hardy herbaceous. Seed and division. Common soil.

"*HORN.* See *Animal Matters.*

"*HORNBEAM. Carpinus.*

"*HORN-OF-PLenty. Fedia.*

"*HORN-POPPY. Glaucium.*

"*HORSE-CHESTNUT. Aesculus.* There are the following species and varieties:—

"*Æ. Hippocastanum.* Common horse chestnut. Asia. Seeds sown in March. Flowers in May. Height, forty feet.

"*Æ. H. folia aurea.* Gold-striped horse-chestnut.

"*Æ. H. folia argentea.* Silver-striped horse-chestnut.

"These two varieties have the same characteristics as the preceding, but are propagated by grafting in March.

"*Æ. flava.* Yellow horse-chestnut.

"*Æ. pavia.* Scarlet horse-chestnut.

"*Æ. pavia rosea.* Pale scarlet horse-chestnut.

"All natives of Carolina. June. Grafts. Twenty feet.

"Horse-chestnuts all require a light, rich, well-drained soil, and a sheltered situation, being much injured by violent winds. When in blossom they are strikingly beautiful, and their round heads group well with trees having more pointed forms. They may all be grafted on the common horse-chestnut, which is increased by seed or layers."

It is certainly one of the few useful works that are within the reach of gardeners of moderate means. The author says in his preface, that he "does not wish to mislead his

readers into a belief that this is a Botanical Dictionary: on the contrary, he has confined his notices to such genera of plants as deserve a place in some department of the garden, and for the most part, even in enumerating the number of species in each genus, only those have been reckoned that are worthy of publication." This is quite true, and it was necessary to state the fact, as the natural inference would be that the author was mistaken in his estimate as to the number of species in a genus.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

AUTHORITIES.—*Journal of Horticultural Society*, JI. H.S.—*Gardener's Gazette*, G. G.—*Gardener's Chronicle*, G. C.—*Gardener's Journal*, G. J.—Quotations from which are duly acknowledged by the respective initials attached to each.

FUCHSIAS FOR BORDERS.—There are few of the Fuchsias which are now cultivated extensively that have the merit of some of the older and neglected kinds. We allude not to their properties as florists' flowers, but as universal flowers—flowers for the open border and the parterre. In this situation some of the older kinds are capable of assuming a highly beautiful character, and such as to warrant a far more general introduction of them into such situations. Some of the kinds alluded to will also survive out-doors with little or no injury, this depending on the locality. In any moderately sheltered situation the root will survive, and in spring produce a number of fresh branches; but under more favoured circumstances, and in the mildest seasons, they will often stand with the mere loss of the tips of their unripened shoots. This fact is not, we think, generally known among amateur cultivators. We will mention one or two of the kinds here alluded to. The old variety called *globosa*, is perhaps unsurpassed when allowed to grow in this way; if killed down to the ground it throws out numerous shoots, and these form a compact dense bush of a foot or eighteen inches high, and in the proper season, literally loaded with its balloon-shaped blossoms. The effect of this, if not placed too near any very brilliant colours, is excellent, and perhaps this is its best form. A larger grower, *F. virgata*, not now often met with, is, as a flowering shrub, unrivalled; this if killed down, grows up three feet high; we have seen bushes of it which have stood in the open borders, and have attained this in height and diameter, the branches all round being studded with its elegant ear-drops. Where it is not killed down, it would of course become proportionally larger. *Fuchsia Riccartoni*, is another large growing plant, reaching from two to three feet, and one of the hardiest of all: it stands out even in unfavourable situations, sometimes

losing its stems by frost, and at others only the tips of the shoots. It is remarkably prolific of blossom, and the flowers are bright coloured, and approaching the globe variety in shape. In some places, this variety attains a large size. At Mulgrave Castle, in Yorkshire, there is one which has been planted out for six years, and has never received the slightest protection, nor been injured beyond having the tips of the unripe wood killed. It stands on the lawn, clear of all protection, and measures eight feet in height, and from thirty-five to forty feet in circumference; it is, in fact, a perfectly monstrous bush, and during the summer months is completely covered down to the ground with flowers. It is hardly possible to conceive a plant more beautiful and striking in its effect, than this must be.—*M.*

PITMASTON CHAMPAGNE GOOSEBERRY.—This is an improved valuable garden production, raised by John Williams, Esq. of Pitmaston, between that variety of Gooseberry known in our gardens as the Red Champagne, and one of the robust North American species, with strong double spines, and small black astringent berries. The flowers of the Champagne were fertilized with the pollen of the American plant, the name of the species being now unknown, its cultivation having been discontinued on account of the superiority of its offspring. The produce of this cross inherited too much of the quality of the exotic plant, therefore seedlings, without hybridization, were subsequently raised from it. This variety has the rich sweetness of the Champagne Gooseberry combined with a little of the black-currant-like aroma of the North American parent. The chief peculiarities exhibited by the bush, are its luxuriant spreading growth, as it promises to become four times the size of a common Gooseberry-bush, and its having very strong spines, some nearly an inch long. The fruit is small, but very abundant; and it ripens and remains long on the trees in its mature state.—*Fruitist.*

HORTICULTURE.—If the admiration of the beautiful things of nature has a tendency to soften and refine character, the culture of them has a still more powerful and abiding influence. It takes the form of an affection; the seed which we have nursed, the tree of our planting, under whose shade we sit with delight, are to us as living, loving friends. In proportion to the care we have bestowed on them is the warmth of our regard. They are also gentle and persuasive teachers of His goodness who causeth the sun to shine and the dew to distil; who forgets not the tender buried vine amid the ice and snows of winter, but bringeth forth the root, long hidden from the eye of man, into vernal splendour or autumnal fruitage.

The lessons learned among the works of nature are of peculiar value in the present age. The restlessness and din of the railway principles, which pervade its operations, and the spirit of accumulation, which threatens to corrode every generous sensibility, are modified by the sweet friendship of the quiet plants. The toil, the hurry, the speculation, the sudden reverses which mark our own time beyond any which have preceded it, render it particularly salutary for us to heed the admonition of our Saviour, and take instruction from the lilies of the field, those peaceful denizens of the bounty of Heaven.

Horticulture has been pronounced by medical men as salutary to health and to cheerfulness of spirit; and it would seem that this theory might be sustained by the happy countenances of those who use it as a relaxation from the excitement of business or the exhaustion of study. And if he who devotes his leisure to the culture of the works of nature benefits himself, he who beautifies a garden for the eye of the community is surely a public benefactor. He instils into the bosom of the man of the world, with the gold fever, gentle thoughts, which do good like a medicine. He cheers the desponding invalid, and makes the eye of a child brighten with more intense happiness. He furnishes pure aliment for that taste which refines character and multiplies simple pleasures. To those who earn their subsistence by labouring on his grounds, he stands in the light of a benefactor. The kind of industry which he promotes is favourable to simplicity and virtue.—*Chambers's Journal.*

PROPAGATION OF THE LETTUCE.—It may be an object with some to propagate lettuces without waiting for their more tedious production by seed. Everybody knows that when a lettuce is cut, the stump sends up a parcel of shoots; but it may not be known to every one that each of these shoots possesses its own peculiar root, and that by slipping it off, with a portion of the skin and stalk below it, a perfect lettuce plant will be obtained. It is said cabbages are thus propagated in India. A lettuce, however, has much the advantage of a cabbage in this matter, for it is much easier to slip off with the lettuce shoot a small portion of the old root, which may probably assist the rooting of the plant. I have, within the last few days, attempted thus to propagate lettuces, and as yet I see no fear of being successful. I proceed thus: I take up the stump when the shoots are about an inch long; but I have taken some even three or four inches long. I slice the stump for about an inch or so down, so as to form a small triangular shaped slice of old stem to each shoot, and tear this off so as to bring a small portion of

the old root with it. I dibble them out on well manured ground, about twice as thick as I propose them to stand, lest there should be any failure; and as I can transplant the spare ones afterwards, I put them in pretty deep, so as to have the entire of the stem-slice below the surface, and give them plenty of water. Of those I so treated about five days ago, not one has failed as yet, but all look fresh and well, even those which had no portion of the old root with them.—*Irish Farmers' Journal*.

ADVANTAGES OF BUDDING.—Budding, when done properly, is not without its advantages to the propagator. For instance, there are some trees that propagate more readily by budding than by grafting, although budded trees may be later in producing fruit than those that are grafted. But when a tree is rare, every eye may produce a plant, which cannot be done by means of grafts; or, when a graft may fail in the spring, a bud can be applied in summer. Fruits may be improved by working one kind upon another; and it is a well-known fact, that the double yellow rose, which is a difficult flower to grow in many places, does well when budded upon the common China rose. Seedling fruit trees are often a long time in bearing, but by means of budding they will bear fruit much sooner than by any other method. Many varieties of roses may be grown upon one stem, and different kinds of fruit from one root. Both flowers and fruit may be improved by it; and if it was more practised than it is, the flower garden might be more gay, and the fruit garden more productive.—*Scottish Farmer*.

LARGE ARAUCARIA IMBRICATA AT DROMORE.—The following is the height and dimensions of the finest specimen we have of this noble tree, which is supposed to be the largest in Europe:—height, 22 feet 6 inches; diameter of branches near the ground, 10 feet 6 inches; 4 feet from the ground, 12 feet; 10 feet from ditto, 10 feet; 14 feet from ditto, 8 feet 3 inches; girth of stem near the ground, 2 feet 10½ inches; 5 feet from ditto, 2 feet. September 1840, height, 14 feet—April 1844, 20 feet. The tree has made a rapid growth this season, and promises to get a foot higher or more before autumn; it is about 16 years old, and has never had the least protection; it stands in rather an exposed situation, on a raised mound, in which the tree delights. The soil is loam, with a small portion of very inferior peat, and the plant has never been watered even in the hottest seasons we have had. A wet subsoil is certain death to the Araucaria in very wet seasons. A plant here from a cutting, made a leading shoot in the year 1833, and is now 19 feet 6 inches in height, and has every appearance of making a splendid tree.—*G. C.*

THE SWEETWILLIAM.—As the main features in the improvement of the Sweetwilliam, exclusive of smoothness of outline, are the increase of the size of the individual flowers, and the decrease of the number produced in a truss, it is probable that these improvements might be soonest effected by calling in the aid of some of those species of *Dianthus* which are nearest related to the Sweetwilliam. There is such a minute family resemblance to be observed among the different kinds of *Dianthus*, that it is by no means probable such an intermixture would so far alter the progeny as to cause them to be no longer Sweetwilliams; at any rate, this is not at all likely to result from intermixture with some of the kinds which are most likely to be useful in other respects. Miller states, that the Mule Pink is a hybrid between the Sweetwilliam and Carnation, and if such is indeed the case, (and the authority is good,) this fact may be taken as a very strong inducement to test the experiment recommended. There is one kind in particular which I would recommend a trial of, the Sweetwilliam being the seed-bearing parent: this is what is often known in gardens as the *Dianthus splendens*; it forms a slender, hardy, herbaceous plant, with more of the appearance of a Sweetwilliam than of a Pink, and has large flowers of a deep vivid crimson, in much smaller bunches than those of the Sweetwilliam. Here, therefore, seems to be just the materials—flowers large and few in number. The colour would look beautiful in a Sweetwilliam; but this is, of course, a point that would admit of much variation after the requisite size of the flowers and form of the truss was secured. The Indian pink (*Dianthus chinensis*), a very beautiful thing, but chiefly of light colours, would also be a likely one for the object; and there are others which might be used. There is one thing which should be borne in mind by any person who would try the experiments: hybridists should never feel discouraged; for the most part, their successes are but the just reward of perseverance. If the required size and habit are not produced in the first generation, these—not the originals—should be again operated on, and the next generation again, and so on. In this way alone it is that any measure of success, in objects of this nature, will be realized.—*M.*

SPINACH.—Many persons confine themselves in the autumn sowing to the winter or prickly spinach alone; but we have seen the summer or round-leaved kind cultivated the whole year round, and in the same way. When the plants acquire a considerable size, the outer leaves are constantly picked off, and the inner ones left to grow. The plants are not so inclined to run to seed as in summer time, and they bear a moderate frost.

*Cedar of Lebanon.*

SACRED AND CLASSICAL PLANTING.

BY JAMES GRIGOR, NORWICH.

TREE-PLANTING in general has been actively prosecuted of late years; but there is one section of arboriculture which has not, in my opinion, been carried to that degree of perfection of which it is susceptible. I refer to Sacred and Classical Planting, or the congregating together of such trees as are interesting purely on account of the almost holy associations which they invariably awaken. To some, this subject may appear to be but of trifling import; to others, I am happy to say, the idea is fraught with an importance which the uninitiated have little conception of.

To underrate any description of planting is by no means the object of this paper. Such an attempt would meet with little sympathy in a country which in pure love for the sylvan features of Nature takes precedence of all the nations of the world. Yet, although the ligneous productions of the earth, wherever found, are highly prized in this country, there are unquestionably some which, by association alone, are wrapped up in a more interesting garb than others. It is true the trees of America, Australia, and India, are, equally with those of Palestine and Greece, "*tabernacula quæ fixit Dominus*,"—"the tents which the Lord hath spread;" yet, who hears in any of them those whisperings of an antiquity loved and dwelt upon? Those countries may boast of their eternal forests, but still they are unconsecrated. The American and Australian ligneous floras are especially devoid of any accompaniment derived from Fame. The arts and sciences have as yet no temples there which will be thought of in after ages, and, consequently, no link has been formed with existing objects or individuals. Poetry in those countries has not yet taken up those

images presented by their magnificent sylvæ, and set them to the end of time in verse. Their forests, therefore, indicate only the changes in the vegetable world everywhere going on—a gradual approach to maturity—that maturity gigantic and long-lived—and then a like gradual descent to decay and death. Hence it is that the humble thyme plant, not a foot high, nourishing the apiaries of Hymettus, lives in the recollection of mankind, whilst the loftiest *Platanus* on the Ohio awakens no retrospective sentiment whatever.

In these matter-of-fact days, it will be asked, of what *use* is Biblical and Classical Planting? To this question it might be sufficient to refer to the numerous and earnest pages that have been devoted by natural historians to such plants referred to in sacred and classical works, as are now of dubious identification: for example, the Mustard-tree, the Hyssop, and the Lily of the valley; but it may be stated at once that planting such trees forms a pure source of pleasure, inasmuch as it leads back the mind to some of the holiest and best days of the world, and serves invariably to suggest some of the finest passages of its history. To youth, especially, such trees form the best means for awakening the lights of antiquity: all its greatest actions, all its holiest and sweetest spots, live in such productions, and are thus easily impressed on the mind. In Biblical times, we find the patriarchs expressing themselves in earnest language with reference to trees as ornaments to their last resting-place. Thus, "*Let us have the field, and the cave which is therein; and all the trees that are in the field, and that are in the borders round about; and let them be made sure for a possession to us.*" In classic

Greece, whether on her hills, beside her streams or mossy fountains, trees had a prominence and importance such as they have never had since. In that country, Nature was not only allowed to make herself heard and seen, but she was energetically encouraged. Her umbrageous valleys and odoriferous uplands were filled with gods. Woodland temples rose on all hands. Every leaf which expanded itself was appropriated to religion; so that, independent of her usual verdant covering, she wore here a rich mythological tissue. Hence it was that a wreath of an evergreen formed the noblest reward that could be conferred on the most distinguished citizens. That circumstance alone will give all "possible eternitie" to the laurel.

One of the first trees in sacred association is the Cedar, a native of a lofty ridge of mountains in Syria. In winter, Lebanon is always clad with snow, which, towards the north-east, where it is sheltered from the sea-breezes and sunshine, remains sometimes during the whole year. The tree is therefore perfectly hardy in the climate of England, and is, of course, appropriate for that description of planting now under review. Perhaps the most promising young plantations of this tree in Britain are those of Sir George Macpherson Grant, of Ballindalloch, in the north of Scotland. The cedars are planted on the sides of sandy hills, which before were partially covered with trees sufficient to cause shelter, but not so close as to interfere with the proper development of the cedars. This, in my opinion, is the best way to get up a crop of this tree; for it is naturally disposed to become merely a spreading bush, without any stem; but when the chief supply of air is overhead, it naturally forms a good leading shoot. Technically, it requires to be *drawn up*. A new and grand feature in scenery is sure to be the result of an elevated plantation of this tree in maturity.

Gazing upon this object, the reflections which it excites are numerous:—It was seen from Jerusalem, casting a "weight of glory" over the lofty mountains which environed that city like a magnificent rampart. It grew on that site whence the eye commanded a spectacle more glorious, perhaps, than was ever enjoyed from any other spot on the globe, embracing a view almost without interruption from the waters of the Mediterranean to the confines of the Persian Gulph. It was peculiarly the tree of Palestine. It was the belief, that God loved it more than any other tree. It was seen on all the hills of the holy city,—planted extensively by Solomon around his seat there, and personally recommended by him, as a most desirable ornament throughout Judea. Figuratively, this plant seems to have

formed the general standard of excellence,—the Hebrew poets having had continual recourse to it as a fitting source of illustration. Had the graces of the Church to be described, it was by a reference to Lebanon and its cedars;—the prosperity of the righteous, it was by a metaphor borrowed from this tree—"He shall grow as the cedar of Lebanon." Whatever was comely and majestic in the human countenance, or whatever commanded the love and reverence of the beholder, was aptly illustrated by this celebrated object. To see Lebanon and its cedars was, in ancient times, accounted a great privilege; and the anxious desire with which Moses and the people of Israel, whilst journeying in Egypt, looked forward to this favoured part of the Land of Promise, may be gathered from the earnest language of the patriarch:—"I pray thee," he says, "let me go over and see the good land that is beyond Jordan, that goodly mountain, and Lebanon." In its living state, the cedar, no doubt, conferred a very peculiar and striking character to the scenery of the East; its depth of green, and the disposition of its branches, rendered it "for glory and beauty" unequalled amongst all the objects of the vegetable kingdom. Mechanically considered, it was equally sought after and prized. Jupiter's sceptre was attributed either to the cedar or cypress, a symbol of the eternity of his empire, because the tree was considered free from corruption. In the temple of Apollo at Utica, the wood of this tree was found nearly 2,000 years old. Sesostris, king of Egypt, built a vessel of 280 cubits, gilded without and within, with the cedar wood. It is highly probable, too, that king Solomon, who "made a navy of ships in Ezion-geber, which is beside Elath, on the shore of the Red Sea," drew largely upon Lebanon for such an undertaking; but whilst there is some doubt on this point, it is certain that the timber employed in building the sumptuous Temple and palace of Jerusalem was of this tree, and of the growth of Lebanon. "All was cedar,—there was no stone seen." It appears, further, that the infatuated idolator chose this wood for forming his favourite images; for it is recorded, that in a Spanish oratory, consecrated to Diana, some centuries before the destruction of Troy, beams and figures of this wood were found of great antiquity. In the famous Ephesian temple, the statue of the goddess, "whom all Asia and the world worshipped," was reputed to be of this material, as was the most of the timber-work of that glorious structure. The idol, too, "which fell down from Jupiter," so closely consulted by those at Ephesus, was fashioned of the same wood; and it is probable that the most of the "graven images" of all idolatrous

nations were of cedar, because in ancient times it was not only greatly prized for its beauty, but invested with imperishable qualities. Such are some of the traits of the cedar, one of the grandest ligneous products of either hemisphere, and far excelling others in sacred historical remembrance. It rightfully takes its place on the tops of mountains, and associates, naturally, with no trees except its own kindred—the pines and firs. Though generally dwarfed and stunted in this country, by being placed in situations and soils unfavourable to the development of its unrivalled character, it may be seen in a few instances exhibiting something of that extraordinary beauty which distinguished it in the days of Solomon, and rendered it the boast of Syria.

Cavillers there are who insist that the cedar of the Bible cannot be that of Mount Lebanon, as the tree cannot be considered very lofty. Let all such get a sight of a tree of this sort, growing at the seat of Robert Marsham, Esq., Stratton Strawless, Norfolk, a noble, upright specimen, with a branchless trunk of about forty feet.

Next in importance is the Oak. It will not be necessary to dwell at any length on this tree, as its associations both sacred and classical are well known to every one. The object of this paper is to offer, if possible, new and striking features. It is scarcely to be wondered at that this grand object bearing, when in perfection, such an immense burden of boughs and spray, with a tufted, irregular, and, consequently picturesque outline, should have been selected as an object worthy of so much veneration. A chain of exalted remembrance is linked to it in the mind of all those who have read any classical author; and in the Bible there are several incidents connected with it, sufficient to hand it down as a venerated object to the latest ages of the world. The patriarch Abraham spread his tent under the oak of Mamre, and formed a grove of this tree for the accommodation of his family and friends, where they might rest their weary limbs and drooping bodies in the heat of the day. Under an oak Joshua set up the tabernacle of the Lord, that the congregation might with comfort perform the public services of religion. How highly the descendants of Jacob valued those oaks which grew on Bashan may be gathered from a remark in the book of Ezekiel with reference to Tyre—"of the oaks of Bashan have they made thine oars." Throughout the East it was customary to bury the dead under an oak, so that the relations might sit over the grave screened from the fierce heat of the sun. This imperial plant, even

"Jove's own tree,

That holds the woods in awful sovereignty,"

was well known all over Greece, and forms the

basis of many a Hellenic legend. According to some, Jupiter's might was derived from the oak; and with a disinterestedness worthy of imitation, he no sooner felt its power within him, than this father of gods and men set himself to the task of teaching mankind to live upon acorns, so that they might participate in his puissance. The temple and oracle of this god in Dodona, the most ancient in all Greece, was surrounded by oaks, which, with the ground in the neighbourhood, was endued with a prophetic spirit. The oaks, therefore, became endowed with this gift, and delivered oracles. So far as the classic page is concerned, the voice of antiquity directs us to no tree more generally than the oak. It grew chiefly and in greatest abundance on the slopes and heights of Hellas, introduced, it is true, near to residences, for the sake of its umbrageous and cool arches in summer time, but still in its greatest perfection in the magnificent solitudes far from the busy hum of men. The state of art, of poetry, and elegance in Athens might have been pretty correctly ascertained from a simple fact connected with this object—the intense, yet discriminating delight with which the people looked upon the beauties of the oak in its numerous varieties, during its gorgeous autumnal appearance. Notwithstanding our advance in civilization and refinement, and love for sylvan imagery, it is questionable whether we are yet up to the mark of that taste which the Athenians exhibited in all that relates to trees and planting.

The Mulberry is generally reckoned as a Biblical tree, but it is very doubtful if it has really a right to be so included. Loudon, without inquiring whether our translators were right in rendering the original term *baca*, at once concludes that the tree is twice mentioned in the Sacred Writings. Hasselquist states, that the mulberry scarcely ever grows in Judea, very little in Galilee, though abounding in Syria and in the mountains of Lebanon. In Chronicles, the term *becaim* is rendered pear-trees, and Aquila and the Vulgate have it in the same way. Parkhurst gives it as his opinion that *baca* means a kind of large shrub from which is distilled an odoriferous gum, and in this opinion he is strengthened by the fact that the Arabs have a shrub corresponding with this description, which they likewise call *baca*. Its other associations rest on a clearer foundation. Pyramus, who lived in Babylon, became enamoured of Thisbe, a very beautiful virgin of that city. The flame was mutual, but their parents forbade marriage, so that the lovers regularly interchanged sentiments through an aperture in a wall which separated their houses. They agreed to meet at a given time at the tomb of Ninus, which was overshadowed by a white mulberry-tree, and with-

out the walls of Babylon. Thisbe was first there, but the unlooked-for arrival of a lioness frightened her away; and as she fled she dropped her veil, which the lioness found and left covered with blood. The lover soon after arrived, and having found Thisbe's veil bloody, concluded that she had been torn to pieces by wild beasts. He instantly stabbed himself. When she had so far recovered, Thisbe returned, and when she saw the dying Pyramus, she fell upon the sword with which he destroyed himself. The mulberry-tree was stained with the blood of the lovers, and ever afterwards bore fruit of that colour.

Standard mulberries should invariably have a strong stake set up beside them to keep them in an upright position, and this should be continued until the tree is at least twenty years of age. The prevailing characteristic of mulberry-trees throughout England, when left entirely to Nature, is, that they are one-sided and top-heavy, requiring props to support them. This defect might be easily remedied by applying the aid alluded to. The trees should be planted in sheltered situations, in rich trenched soil, kept up by frequent manurings. When so treated the fruit is large and juicy.

The Pomegranate (*Punica Granatum*), Pliny informs us, was first found near Carthage. It is the *malus punica* of the Romans, and the *rimon* of the Hebrews, probably from *rana*, to project, from the strong projection or reflection of light from the star-like crown of the fruit which bears the upper part of the calyx. The high estimation in which this tree was held in the land of Israel may be inferred from the fact, that it was one of the three kinds of fruit brought from Eschol to Moses and the congregation in the wilderness; and from its being distinguished by the rebellious sojourners as one of the most delicious luxuries they enjoyed in Egypt. No circumstance more clearly evinces the value which the Eastern nations put upon this fruit than the choice which king Solomon makes of it to represent certain graces of the Church—"Thy temples are like a piece of pomegranate within thy locks." The ornaments placed in the network over the crowns which were on the top of the two brazen pillars of Solomon's temple were carvings of this fruit, as were also those decorations ordered to be fixed on the skirt of Aaron's robe. Greece was full of it. That district known as the land of Pindar, Hesiod, and Plutarch, was in particular noted for rich crops of this fruit. Agatharchides relates the following anecdote connected with this tree: A dispute arising between the Athenians and Boeotians, respecting a spot called Sidè, situated on the borders, Epaminondas, in order to decide the question, took out a pomegranate

from under his robe, and demanded of the Athenians what they called it. "Rhoa," they replied. "Very good," said Epaminondas; "but we call it Sidè, and, as the place derives its name from the fruit which grows there in abundance, it is clear the land must belong to us." And it was decided in favour of the Boeotians. In fine seasons it produces its fruit of the full size in this country when trained against a wall.

The Fig-tree is frequently mentioned in the Holy Scriptures, and is common throughout Palestine and the East generally. Amongst the ancient Hebrews it was known as *thaena*, signifying the tree of grief, probably from the leaf causing inflammation when applied to the body. It was of this tree that our first parents, immediately after the fall, twisted for themselves girdles or aprons. Throughout the Holy Land the failure or destruction of the fig-tree was accounted one of the greatest public or private calamities. Hence it is said, "Although the fig-tree shall not blossom, &c. yet I will rejoice in the Lord." In ancient Greece this fruit-tree was well known and extensively cultivated. It was the pride of Attica. According to the traditions of the Athenians, figs first grew on a spot not far distant from the city on the road to Eleusis, thence called Hiera Sukè, "the sacred fig-tree." So much prized was the fruit here produced, that the inhabitants were forbidden to export them. This law, however, was often contravened, and the informers against the delinquents were called *sycophants*, or "revealers of figs;" a word which has since been in use to characterise mean-souled, dastardly persons, such as informers generally are. Naxos, a celebrated country in the Ægean sea, was celebrated for its fig-trees, which were especially cherished by Bacchus, who was the chief god of the island. Here this divinity obtained the title of Meilichios, "the gracious," because he taught them the use of this fruit. In the processions of this god the fig was carried next to the vine. Throughout Sussex the fig is planted as a standard; and it is in this character that it can be best introduced in a classical group with others.

To the Olive-tree the Sacred Writings abound in references; it has been from the earliest ages the emblem of peace, and the bounteous gift of Heaven. In the garden of the Horticultural Society at Chiswick, and in several parts of Devonshire, it grows as a standard, and survives the severest winter. In other counties, therefore, it may be made to flourish with the aid of shelter. This tree rose plentifully all over Judea, and so viewed, excites a crowd of interesting reflections in every well-disposed mind. Thus it is often figuratively used in the poetical diction of the

East. Speaking of the righteous man, it is said:—"His branches shall spread, and his beauty shall be as the olive-tree." The most distinguished, and, to many, the most endearing, reflection suggested by this tree arises from its giving the name to that Mount (the Mount of Olives) so famous in the history of the Saviour. This mountain lay a little out of the city of Jerusalem, towards the east, commanding a full view of the metropolis, from which it was separated by the valley of Jehoshaphat, and the brook Kedron. To it the Redeemer of the world was wont to retire in the evening, after He had spent a laborious day in teaching the multitudes that attended His ministry in Jerusalem; from it, He gazed upon the city, wept over it, and predicted its final overthrow. In the garden, which lay at the bottom of this hill, He commenced the scene of His last sufferings; and from the highest or central elevation, He ascended into heaven. The olive crowns the top of the hill till this day; and from its being so remarkably long-lived, it is thought by many, that the vicissitudes of eighteen hundred years have not yet swept away the identical objects under which our Redeemer wandered. To many superficial readers of the Bible, and especially to those who rest implicitly on our translation of it, the olive-tree forms a stumbling-block not easily removed. The plant, as is generally known, does not produce leaves of a deep green colour, though properly enough classed amongst our evergreens. The leaves resemble those of the willow, are of a light, or yellowish green, and sometimes rusty underneath, and do not equal the expectations of travellers. Thus Mr. Sharpe, while in the East, observes:—"The fields are in a manner covered with olive-trees; but the tree does not answer the character I conceived of it: the royal Psalmist, and some of the sacred writers, speak with rapture of the green olive tree, so that I expected a beautiful green; and I confess I was wretchedly disappointed to find its hue resembling that of our hedges when they are covered with dust. The olive tree may possibly delight in Judea, but undoubtedly will disgust a man accustomed to English verdure." Now, it so happens that the word translated *green*, means vigour or freshness; and every one must know that exuberant vegetation is not necessarily of a green colour, but frequently of a red or pinkish tinge. In Daniel, the Seventy translators render the same word *flourishing*: for it is absurd to suppose, that when King Nebuchadnezzar said,—"I was at rest in my house, and green in my palace," (as it is in the Hebrew,) he referred to colour. The passage in the Bible, therefore, should be rendered:—"I am like a *vigorous* olive tree, in the house of

God." Rich harvests of this tree waved over the plains of Greece; and it is yet an inhabitant of that highly-favoured country. It presents nothing magnificent,—nothing solemn, for it never exceeds fifty feet in height; yet its loveliness and sunniness amply compensate for its shrub-like size. A warm, dry air seems to suit it best. Hence it was found in greatest perfection in Attica and Cilicia. In those countries, when regularly propagated for its oil, it was the practice to plant the trees thirty feet apart, so as to allow the air to circulate freely about them on all sides. This tree forms a favourite haunt of singing birds, having a thin shade, sufficient to shelter them from excessive heat, yet not excluding much light.

The Almond, mentioned in Holy Writ, was by the Hebrews called *shahad*, signifying to watch, or awake, because after the rigours of winter, it is one of the first to hail the coming of spring. This idea seems to be referred to in the vision which Jeremiah the prophet had. "The word of the Lord came unto me, saying, Jeremiah, what seest thou? And I said, I see a rod of an almond-tree. Then said the Lord unto me, Thou hast well seen; for I will hasten My word to perform it;" or rather, "I am hastening or watching over My word to fulfil it." The rod of Aaron was of the almond-tree, as were also the rods which the princes of Israel bore. The tree has an interesting history in Greek mythology. Demophoon, the son of Theseus and Phædra, on his return from the Trojan war, visited Thrace, where he was tenderly received and treated by Phyllis, a beautiful queen, whose charms were not unappreciated by him. He retired to Athens, of which he was king, promising to return to Thrace at the end of a month. At the expiration of the time, the queen wandered daily on the sea-shore looking out for her lover, and when at last winter came, and he returned not, in an agony of despair, she fell dead by the sea-side, and was immediately changed by the pitying gods into an almond-tree. Her lover soon after returned, and hearing what had taken place, flew to the tree and clasped it in his arms, when the love of Phyllis, unable even then to restrain itself, caused the tree, though in winter, to burst forth into blossoms. The beauty of this tree when in flower, at a time when others have not begun to bud, renders it a most desirable object near to residences. It is the first to interrupt the reign of winter, and consequently the earliest forerunner of the coming spring.

The Apple-tree is mentioned in Holy Writ; but I am inclined to believe that our apple (*Pyrus Malus*) is not the tree alluded to in the Sacred text. In Canaan, and the sur-

rounding country, it is almost worthless, and is by no means entitled to the praise bestowed on that tree by the Spirit of inspiration. The inhabitants of Egypt and Palestine import their apples from Damascus, their own orchards producing no fruit fit for use. It is impossible, therefore, that a tree whose fruit was represented to be most delicious and comforting, could be found in the "crab, or wilding," whose fruit, according to Pliny, had "many a foul word and shrewd curse given it," on account of its sourness. Besides, the apple of the Scriptures is classed with the vine and fig, palm and pomegranate, as furnishing a grateful repast, and the failure of which was reckoned a serious calamity,—an unquestionable proof, that we must look elsewhere for the real apple of the Holy Land. In Patrick's Commentary it is thought that the word *Thepucheem*, translated apples, denotes any species of fruit emitting a fragrant odour; but this definition is too vague to be useful. The term occurs in six passages of Scripture, and in them all it is given as an appropriate title to one of the noblest trees in the garden of Nature. "As the apple-tree among the trees of the wood, so is my Beloved among the sons; I sat down under His shadow with great delight, and His fruit was sweet to my taste." Again:—"Stay me with flagons, comfort me with apples, for I am sick of love." "A word fitly spoken, is like apples of gold in pictures of silver." Now, when it is known that trees of the citrus family flourished in Judea several centuries before the birth of Christ, and when it is recollected how appropriate the passages quoted become when applied to the citron, or orange, there is little doubt of their referring to the genus just mentioned. Flourishing under oriental skies, the citron becomes a large and beautiful tree, having a perennial verdure, and perfuming the air with exquisite odour. It is with peculiar propriety, therefore, that the spouse exclaimed:—"As the citron or orange-tree among the trees of the wood, so is my Beloved among the sons. I sat down under His shadow with great delight, and His fruit was sweet to my taste." Those who are desirous of trying orange and citron-trees in England, may take courage from the fact that they grow to a large size, with a slight protection during severe winters, at Salcombe, near Kingsbridge, in Devonshire; and at Dartmouth, Lnscombe, and Kitley. I am inclined to think that if spaces were cleared in plantations, with an open space to the south, these trees might be planted in such places with every prospect of success. In severe weather the tops and stems might be thatched with dead branches, and their roots covered with dry litter and also thatched. This is the fruit which King

Juba describes as the apple of the Hesperides, by which name it was known throughout Africa. The most ancient Greek writer who describes this tree is Theophrastus, who says it was grafted on the common apple to produce black citrons, and on the mulberry for the sake of getting the fruit of a reddish colour. Such things are quite impossible; all statements like these tend only to weaken the testimony of this great naturalist in other matters, and show clearly how closely the earliest efforts in history are allied to the works of the mythologists. This tree thrives remarkably well in Lower Egypt; and in the Garden of Heliopolis, where it shades the Temple of the Sun, it appears in matchless beauty. It is questionable whether the citron was known to the ancient inhabitants of Hellas; for Antiphanes observes in his *Bœtian*, that it had only been recently introduced into Attica:—

- "A. 'Twould be absurd to speak of what's to eat,
As if you thought of such things; but, fair maid,
Take of these apples.
B. Oh! how beautiful!
A. They are, indeed, since hither they but lately
Have come from the great king.
B. By Phosphoros!
I could have thought them from the Hesperian
bowers,
Where th' apples are of gold.
A. There are but three!
B. The beautiful is nowhere plentiful."

Viewed in connexion with the present subject, the Vine forms a most important tree. No effort of mine can add anything to the delight with which this well-known plant is looked upon by all nations. The classics seem to have written under its shade: their pages exhale the sweet odour of its fruit. It is frequently mentioned in the Old and New Testaments. It was known to the inhabitants of Judea both in its wild and cultivated forms, though the former in all probability was not, strictly speaking, a vine. It was certainly not the *Vitis Labrusca*, or Fox Grape of botanists. In the vales near Jordan, not far distant from Jericho and the Dead Sea, is found growing in great abundance the vine of Sodom, which produces fruit as bitter as gall, and according to Bishop Lowth as deadly as the poison of a serpent. This deleterious grape is alluded to by Moses in terms fully bearing out this description: "For their vine is of the vine of Sodom, and of the fields of Gomorrah; their grapes are grapes of gall, their clusters are bitter, their wine is the poison of dragons, and the cruel venom of asps." The tree, however, referred to so often in the Bible and in Classic Song, is the grape-vine (*Vitis vinifera*), well known throughout all the temperate zones of the Old World as an exuberant climber, and pro-

ducing the noblest and most delicious of beverages. Thus, in contradistinction to the spurious plant, our Saviour in the Gospel of John says, "I am the true Vine, and my Father is the Husbandman." And again, in the triumphal Song of David on the plagues which desolated Egypt and procured the liberation of his ancestors, he says, "He destroyed their vines with hail, and their Sycamore-trees with frost." Of all the grapes produced in the East, those of Canaan were considered to be the finest. Dandini, an Italian traveller, and accustomed of course to see grapes in great perfection, was surprised at the extraordinary size of those produced in the vineyards of Lebanon, which were of the size of prunes, and of the most delicious taste. In the book of Numbers, it is stated that a bunch gathered in the valley of Eschol required two men to carry it some distance, a fact which has been recently confirmed, if any proof had been needed, by Doubdon, who met with very extraordinary vines near to Bethlehem. Persia seems entitled to the honour of giving birth to this plant; thence it appears to have found its way into Judea, Greece, and Sicily, and soon after into Italy, Spain, France, and Britain. It is, however, contended by Theopompus, that it was the inhabitants of Chios, an island in the Ægean sea, who first found it and cultivated it, transmitting it to the other Greeks. This point must for ever remain in uncertainty, for as Homer refers to the vineyards of his heroes, the natural conclusion is, that it was plentiful in Greece before the historical era. Throughout that country, sandy swells or eminences facing the morning sun were fixed upon as the best sites for this plant, and to this day south-eastern declivities are preferred to any other aspect. It is worthy of remembrance, perhaps, that the first instructions in the art of pruning the vine so as to induce it to bear the more plentifully, was borrowed from an ass browsing upon it, and for this hint a marble statue was erected in honour of this quadruped in the maritime town of Nauplia. The vine was sacred to Bacchus, and throughout Greece, when the labours of the vintage were concluded, scenes of Bacchic enthusiasm and excess were yearly enjoyed by the youthful rustics engaged in that glorious harvest. The references to the vine in the classics are endless; and he who has the leisure and inclination to search for them, will not long look in vain. I have seen the vine planted in England near to elm-trees, on which it found a suitable space to spread its branches; and I recollect in the garden of the late Mr. Loudon, at Bayswater, several vines were so planted which bore remarkably well. It is necessary that the branches of the elm should be thinned sufficiently to admit

light and air, otherwise the grapes will not ripen. In this form it had better be introduced in a collection of sacred and classical plants, choosing the English elm (*Ulmus campestris*) as its support, as that tree was also known to the Greeks.

The Juniper is twice mentioned in the Holy Scriptures. Commentators are in great doubt and uncertainty regarding the tree to which the inspired writers allude, arising from the somewhat absurd idea of keeping the English juniper continually before their eyes. It would indeed be hard to fancy that the prophet Elijah found a refreshing shade under a shrub a few feet in height, without any pretension whatever to the character of being umbrageous. The difficulty, however, is quite uncalled for; and the fact that our divines are so much divided concerning this tree, proves how necessary it is that those who profess to illustrate the Scriptures should have an intimate acquaintance with natural history, or at least the aid of those who know something of that subject. In all probability the juniper of the Bible is the *Juniperus drupacea*, a native of Mount Casius in Syria, and identical with those seen by Bellonius on Mount Taurus—trees which reach the height of a cypress, with a broader head, and therefore more likely to be chosen for shade and shelter. It appears the juniper was resorted to in the days of Job for food; and it is so far corroborative of the supposition hazarded, to know, that at the present day the inhabitants of the mountains above referred to eat the fruit of the *J. drupacea*, which is of the size and shape of an olive. Be this as it may, there is not the slightest occasion to seek a substitute for the juniper of Holy Writ in the Genista or Spanish broom.

The Myrtle has a clearer genealogy, and comes down to us as pure and odoriferous as it grew in the gardens of Cimon, Pericles and Epicurus. Those were the chief patrons of Flora; they had the Myrtle planted in great profusion on mounds freely exposed to the breeze, so that when the plants were in flower the winds came laden with an odour rivalling that of the rose. This shrub is Grecian all over; whether we look at its form, the size, shape, and colour of its leaf, its exquisite fragrance, or the form, colour, and scent of its flowers, the classic stamp is upon it. This favourite denizen of Hellenic lands was dearly loved by the Greek; in his eye it was instinct with divinity, and wherever he saw it, his fancy represented to him a most beautiful maiden of Attica, fairer than all her countrywomen. The tree was peculiarly sacred to Venus; her temples were invariably skirted with it; and under the favourite name of Myrtilla she was adorned throughout Greece.

Full of the traditions of his country, and accustomed to hear the Myrtle associated so constantly with such traditions, it is not to be wondered at that this plant was adopted by him as the *sine quâ non* to temples, gardens, streams, and splashing fountains. In the festival of Europa, at Corinth, a myrtle crown, said to be ten yards in circumference, was borne in procession through the city. The priests of Aphrodite shaded their foreheads with wreaths of myrtle, and the statue of that matchless goddess herself was often crowned with a circlet of the same plant. It was worn by the Athenian magistrates, as well as by all those who had gained bloodless triumphs. It was the reward of victors in the Olympic games; and at Rome the ladies put the leaves into their baths, fancying that this plant of Venus must be favourable to beauty. The general selection of the Myrtle was well made; for it is questionable whether any other would have stood the test of being used in such multifarious ways, and especially as ornaments to the masterpieces both of nature and art. In all classical groups this tree should have a prominent place; and in order to encourage such planters, I may mention that young plants nine inches high stood out in my nursery last winter uninjured. The cause of its succeeding so indifferently as an open air plant, in Britain, is certainly on account of its being by most nurserymen kept in-doors during cold weather, and treated as a green-house plant; whereas it is clearly capable of accommodating itself to this climate, and growing wherever the *Arbutus* will thrive. The allusions to this plant in the Bible are few. Referring to the effect of the Gospel, or the reign of Christ on the state of the world and the dispositions of mankind, it is said: "Instead of the thorn shall come up the fir-tree, and instead of the briar shall come up the myrtle-tree."

In the Gospels of Matthew, Mark, and John, the Hyssop is mentioned. It grows on the mountains around the city of Jerusalem; and as it is plentiful in Calvary, it is probable that it was a handful of this herb that was plucked, imbued with vinegar, and applied to the parched lips of the dying Saviour.

The Box-tree is another Biblical tree, but the sacred allusions to it are slight. In the Augustan era the Roman villas were profusely adorned with this tree clipped into a variety of figures. In Greece it appears to have been kept rather in the back-ground.

The Pine and Fir are also mentioned in the sacred text, but the references to them are not sufficiently clear to warrant any identification.

I close the Biblical list of ligneous plants suited to the climate of Britain with the Rose.

Great diversity of opinion exists among the learned in relation to the true meaning of the term *habetzeleth*, in our version of the Bible translated Rose. The Seventy interpreters, with Jerome, render it "the flower of the fields." Others think the Asphodel is meant, or some other kindred bulbous-rooted plant, and in support of such supposition, the rendering of the term is so far favourable—*habab*, he loved; and *batzel*, a bulb or onion. At any rate, there is not the slightest doubt that the Rose was known and appreciated in Biblical times, though there is some ground for supposing that the species of our genus (*Rosa*) are not referred to in the passages of Scripture.

We now come to those kinds which are more immediately associated with classic times. It is idle to deny that such trees as shaded the land of Olympus can be looked upon with indifference by persons with any pretensions to refinement. In Greece trees were full of poetry, ministering both to the eye and ear,

"A beauteous band oft heard,
Tuneful upon her heights."

And it can be neither idle nor unprofitable at the present time to attempt to awaken similar sensibilities. She who sat upon her seven hills, the mistress of the world, had also her trees and shrubs, well worthy of being selected and grown together.

It is a remarkable feature connected with those trees and shrubs known to the Greeks, that a great proportion of them are odoriferous—many of them exquisitely so. For example, the *Daphne Cneorum*, Thyme, Lavender, Rosemary, Myrica, Rose, Hawthorn, Sweet Bay, and Myrtle.

I shall only enumerate the more striking species, or such of them as have come down to us with the most interesting associations. One of the first is the Cypress, well known to the ancients, and highly prized. It was particularly plentiful in the Isle of Crete, the inhabitants of which, forgetting his immortality, boasted that the tomb of Jupiter was in their Island, and shaded with magnificent specimens of the cypress. It has also been permitted to this tree to be classed as a native of Cyprus, the birth-place of Venus, where every thing animate and inanimate bears the impress of beauty. But of all the localities to which this tree is assigned, perhaps none is deserving of so much notice as its distribution around ancient Rome. That city, it is true, is no longer in existence, but the eternal features of nature there remain the same, and they are yet graced with the same noble species. Southward of the Capitol, then, under a calm blue sky, may be seen the plain of Latium, forty miles in diameter, intersected by the Tiber; the Palatine hill studded with

the ruined palaces of distinguished ancients ; the fragments of the baths of Titus ; the vaults of the Temple of Peace ; the Sepulchral Pyramid of Caius Cassius ; the tower of Cecilia Metella ; and farther in the distance, the Cœlian Mount ; the temple of Minerva ; the baths of Caracalla ; and the Appian Way ; all waited upon by this gloomy attendant, so appropriate to this scene of fallen greatness. The Cypress is a tree which may be employed to great advantage as a contrast to the outline of all Grecian buildings. When young, it requires protection in winter, and the best way to protect it is to stick dead branches around each plant.

The Sweet Bay (*Laurus nobilis*) was very highly prized by the ancient Greeks and Romans. It was strictly a native of both their countries, and known under the name of Daphne. It flourishes to this day on the banks of the Peneus. It was the emblem of victory, and the victorious were crowned with it. It formed the chief adornment to the greatest poets, hence the title of poet-laureate. The most eminent of the Cæsars wore it almost continually ; and such was its celebrity, that a sprig of it popularly bestowed, was looked upon as a mark of the highest possible honour. It forms a beautiful European shrub in the climate of England ; and where at all exposed, it should be invariably covered up with straw and mats during winter, as its freshness in spring, when so treated, invariably shows. No tree will better repay a liberal application of well-rotted manure.

In a Greek garden the Lime-tree (*Tilia europæa*) was planted so as to form a somewhat sinuous avenue or passage, wide and spacious, through which clouds of fragrance were wafted to the apartments of the mansion. This tree contributed its full share of such fragrance ; and with this view it was no doubt preferred to other high trees to skirt the background of all shrubberies, thickets, arcades, and avenues of the fairest seats in Hellas. It was likewise one of the chief of those selected to be planted singly on lawns, forming an excellent protection from the sun's rays, and alluring swarms of bees to its flowers. In the hum of that insect the Greek heard sweet music, and it led the way in his fancy to the thymy pastures of his loved Hymettus. Jupiter and Mercury, when travelling in disguise throughout Asia, were received by Baucis, who, with her husband Philemon, lived in a small cottage in Phrygia. The gods were delighted with the hospitality they met with in this humble dwelling, which Jupiter metamorphosed into a splendid temple ; and granting the request of Baucis, that she and her husband should die at the same time, they were, after living to old age, transformed into trees,

which rose in the front of the temple—she into a lime, and he into an oak. The lime grows vigorously in any situation where the subsoil is loose.

The Platanus (*P. orientalis*) can never die so long as history exists. It is much to the honour of ancient emperors and princes, that amidst all the concerns of empire a love for this sylvan chief was shown so prominently, that historians have minutely handed down to us the instances of homage paid to this object. Throughout Greece and Rome the tree rose in considerable grandeur, with an umbrageous canopy, affording a cool and dense shade from the sun's rays. Orators and statesmen, and the chief men of those cities, grouped it around their villas. Xerxes became so much enamoured of a tree of this species, which grew in Lycia, that he halted beside it with an army of 1,700,000 ; so that for some days neither the importance of his expedition, nor honour, nor the necessary movement of this prodigious army, could induce him to leave it. When obliged to part with it, he had a figure of it engraved on a gold medal, which he continually wore. This tree was planted profusely around Athens, near the Gymnasia, and around the public schools. The groves of Epicurus, where Aristotle taught, were formed of it, as were also the groves of Academus. Socrates swore by the Platanus, and many thought it a crime to swear by a tree of such beauty. It still grows on the banks of the rivers in Greece, and indeed throughout that land ; but it is to be seen in its greatest perfection only in moist places. The finest Plane trees in England are at Thetford, in the county of Norfolk, growing in a deep, free, moist loam on the bank of a river, and in such soil and situation it ought to be planted. It may be well to observe, that this tree is by no means fitted to decorate exposed situations, not even the more distant parts of park scenery ; but strictly to adorn home scenes near to our residences, or such other spots as are completely under the dominion of art. Is it necessary to refer in proof of this to the picture it presents when found, as it sometimes is, classed with the hardy elm, or the roughened and contorted figure of the oak ? Though a vigorous growing tree, it is very easily injured ; and in most seasons, during the cold winds of May, it has a scorched appearance. British skies, winds, and storms test the character of trees ; and if we find this individual when abroad shrivelled and blackened even in May, our course surely is to take it home and nurse it beside our dwellings. Though its foliage is tender, the tree is by no means deficient in a certain picturesque outline ; its young spray proceeds in a zig-zag direction, filling up every space with verdure ; yet, from the spray and branches being irregularly dis-

posed, it is not deficient in exhibiting some of those masses of light and shade so characteristic of the oak and elm.

Amongst the trees selected by the Greeks to plant singly and in clumps was the Elm (*Ulmus campestris*). This plant was chiefly valued for its shade, and for its use in supporting the vine, in which latter capacity it was very extensively employed by the Romans. It was a favourite tree with Achilles, who, in the midst of a grove of elms, caused to be erected a splendid monument to Eetion, king of Thebes. The Elm occupies a very important station amongst the trees of Britain, and it is questionable whether it is not distributed over our parks and pleasure-grounds in as great numbers as the oak. It is at any rate certain that around our palaces, castles, halls, colleges, &c. it is more generally dispersed than our chief forest tree.

Contrary to what might have been anticipated, the Ash-tree was also grown in the gardens and lawns of Grecian villas. It is not to be supposed that it was its shade which entitled it to any preeminence, for in that respect it is deficient. The Greeks, however, no doubt prized it for the elegance of its structure and its easy-flowing spray, which, when the tree is in perfection, not unfrequently hangs about it in loose pendulous masses. But the Ash had other attractions to them. To a people whose souls were so given up to nature, the signs of the seasons so faithfully and beautifully portrayed by this object would be peculiarly acceptable. Whilst by some who live near to nature, and follow her in all her phases, this tree is objected to as prematurely reminding us of autumn; there are others (and the ancient Greeks were of the number) who behold in it a faithful indicator of the season, and esteem it accordingly. In many instances, indeed, the transient duration of its leaves has led many to consider it as a tree which ought to be avoided in all ornamental plantations, as if the early decline of its foliage were at variance with nature, or no embellishment to the landscape. This, however, betrays only a wandering from that beautiful and characteristic system which has been established throughout our sylvan domain, and which Oriental nations, as well as our own peasantry, yet recognise. To them, trees form a calendar, and in this there is a beauty; their budding, leafing, expansion, and fading, are all associated with the circumstances of rural life, and are referred to almost as constantly as are the seasons themselves. In the recital of such incidents we frequently meet with a simplicity and force which common language seldom conveys. St. Pierre has the following: "I met one day," he says, "towards the end of autumn, a country girl all in tears looking

about for a handkerchief which she had lost upon the great road." "Was your handkerchief very pretty?" said I to her. "Sir," replied she, "it was quite new; I bought it last *bean-time*." The mere date, however correct, would have been a blank compared with this compound word, which refers us at once to one of the loveliest seasons of the year. In Scripture language we have "the time of the singing of birds," the time "when the fields are white to harvest," &c.; and in our own rural districts we have May-time, or the season when the hawthorn blossoms; hip and haw time, nutting time, daffodil time, and, for aught I know, the time of the dismantling of the ash-tree. Now, this is just the language which the inhabitants of Hellas were wont to indulge in whilst talking of out-of-door employments; and amongst others the ash formed with them one of the chief trees in foreshowing the march of the seasons. In its dead state it was used as axle-trees, and more nobly, as the spear which Achilles wielded, and by which he in his turn was slain; also as the arrows of Cupid, which afterwards gave way to those of Cypress. In its living form, the autumn tint of its leaf, and the time of the falling of that leaf, was anxiously looked upon as predicated the character of the coming winter; and, indeed, ever since, the dying hue of this object, whilst everything is yet green and fresh around it, has been looked upon as a striking accompaniment, mournful though it may be, to a particular season.

The Sycamore (*Acer Pseudo-Platanus*), and the common Maple (*Acer campestre*), were both known to the Greeks and Romans; but beyond the fact that the wood of the latter tree was in great request for tables, and that Æneas had a throne of Maple-wood, I cannot recollect any reference to their being particularly distinguished in their living state. This of course involves no objection to their being admitted to an honourable place in a classical selection.

The tree consecrated to Hercules was the Poplar (*Populus alba*), and it was in great favour among the ancients, who recommended it to be planted on the banks of rivers. Under a poplar of this description, which grew at the door of Tychius, a currier of Hyle, Homer often sat and recited his poems; and this master of Grecian song frequently introduces it in his Iliad. Thus, he compares the fall of Simoisius, when slain by Ajax, to that of a poplar-tree:—

"So falls a poplar, that in watery ground
Raised high its head, with stately branches crowned."
The black poplar (*P. nigra*) also helped to imprint upon the landscape those features of beauty for which the soil of Greece was so remarkable.

Then there was the Beech (*Fagus sylvatica*), often referred to by Theophrastus, Dioscorides, Pliny, Virgil, and Theocritus. About twelve miles from Rome, near the town of Tusculum, there was a small hill covered with beech-trees, of such beauty, that the inhabitants with one consent consecrated it to Diana, and ever afterwards repaired to it to pay their devotions to that goddess. The Roman poet in the concluding passage of his *Georgics* thus refers to the beech :—

“ I, Virgil, then, 'mid Naples' grateful bowers,
In ease inglorious nursed my studious hours ;
I, whose bold youth the pastoral strain essayed,
And sung thee, Tityrus, in the heecheen shade.”

The moderns have undervalued this tree, for by many it is represented to be an object of little beauty. The truth is, that when the tree is watched narrowly, it affords a series of very lovely changes. We enjoy not vernal weather many days ere its hard, spiky buds are transformed into silken folds ; these in their turn overlay the branches with a verdure which is particularly delicate and soft, and which so far as I know is not surpassed in these respects by the foliage of any other tree or herb.

If it had been only for the sake of scenic effect produced by its mingling with columns and statues, it is gratifying to know that the graceful Birch-tree was a denizen of Hellenic lawns and gardens ; and comes down to us recommended by such an appropriation. The bark of this tree was used by the Romans to write upon, and it was upon this material that King Numa wrote when composing the books which were buried with him on Mount Janiculum. The proper province of this tree in Britain is amongst rocks and ravines, or by some glassy stream, far away from the haunts of men. No soil can be too poor for this tree ; and it is important to recollect, that it grows tolerably when planted near to the sea.

A fit companion to the foregoing was the Weeping Willow, a tree which in Britain is properly associated with localities which are strictly artificial and elegant. It is never found by the mountain stream, or in company with the birch, and is at all times unequally classed with the oak, pine, or other mountain trees. It is not sombre enough for the churchyard, though frequently planted in such a situation. At the same time, the slight classic references to it seem to warrant its being adopted as a sorrowful tree. Dido, when despairing of the return of Æneas, saw in it a fit emblem of her hopeless state ; and modern poets seem to follow in considering it as appropriately named. The white and black willows were also known to the Greeks and Romans, and their chief use was as props to the vine.

The Sweet Chestnut had the honour of shading the favoured residence of the gods—

Mount Olympus. It formed also those cool and verdant walks in the valley of Tempe which the poets have represented as the most delightful on the earth. Here it was first introduced from Sardis, in Asia Minor, and thence transported to Rome in the reign of Tiberius Cæsar. In the latter country the fruit was in much request, and Virgil states that it was a favourite of Amaryllis. A free sandy loam is the soil which it prefers.

The Walnut deservedly held a high place in the estimation of the ancients. This tree was sacred to Diana, and devotions were paid to her under its shade : its nut was called the acorn of Jove, but farther than this he appears not to have patronized it. The monster Mithridates, king of Pontus, fortified his constitution, it is said, by drinking a solution of walnuts, which proved an antidote to the poison administered to him by his enemies at court. I have found it grow extremely well on a subsoil of chalk ; and on any rich land free from stagnant water it will attain a good size.

The Alder was known both to the Greeks and Romans, but of the living tree they have left us, so far as I know, no memorials. When Theophrastus wrote, it was used for dyeing leather ; and in Pliny's estimation, piles made of the wood are “ eternal.” The largest tree in England grows on the right-hand side of the road upon entering the village of Haverland, Norfolk. It stands in a damp favourable situation, near to a rivulet, and soars to the height of sixty-two feet or thereabouts. The trunk, at one foot from the ground, is 11 feet and 7 inches in circumference. An alder of such magnitude is a very singular object, the tree being generally cut down in its youth. Judging from the rugged state of the ground where it stands, its great worth is not known, and the probability is that some trifling incident may one day lead to its removal.

The Hazel, though well known to the ancients, is not often referred to by the Greeks. The Romans, on the other hand, often introduce it, recommending it to be planted in patches by itself, as its roots were found injurious to the vine when in contact with that plant.

The Coniferæ admissible into a group of sacred and classical species are, *Larix europæa* ; *Pinus Pineæ*, *maritima*, *sylvestris*, *halepensis* ; *Cedrus Libani* ; *Abies excelsa* and *Picea* ; *Cupressus sempervirens* ; *Taxus baccata* ; and *Juniperus communis*.

The Spindle-tree (*Euonymus europæus*), enlivened the Greek and Roman villas in the fall of the year with their bright pendent capsules, as they do in England ; and the wood was employed by “ the neat-handed Phillis ” and her mistress in the shape of netting-needles and spindles. The fruit of all the species are

so exceedingly beautiful in the autumn months, when the general desolation of Nature takes place, that no shrubbery should be without them.

The golden festoonery of the Laburnum was also about the classic villas and uplands, not "unprofitably gay," as might be supposed; for according to Theocritus and Pliny, goats were fed with its shoots, which had the effect of augmenting the milk of that animal.

As a beautiful and striking contrast to the last-mentioned plant, there was the Judas-tree (*Cercis siliquastrum*), which is associated with one of the darkest pages of the world's history—the betrayal of our Saviour; for, no sooner had this act been accomplished, than Judas went out and hanged himself on a tree, which by common consent is thought to have been one of this species. Judea abounds with it in a wild state; and what is more to our present purpose, it is found around Rome and throughout Greece. I do not know whether the tree, in the eyes of Christians, is looked upon as degraded by the act of the arch-dissembler referred to; but certainly it is not cultivated so extensively as its beautiful purplish pink flowers and handsome leaves would lead one to expect.

Next is the Rose. A good deal of ingenuity has been exercised to show that this queen of the garden was wholly unknown to the ancient Greeks; but the endeavour to diminish the empire of this universal favourite has proved entirely unsuccessful. Indeed, the attempt was made for the purpose of destroying the claims of certain fragments of the poet of Teos to be considered genuine; but whether Anacreon wrote those pieces or not, the identity of the rose is broadly apparent in the writings of Herodotus, who notices the rose with sixty leaves, as it flourished in the gardens of Midas, at the foot of the snowy Bermios; in the poems of Stersichoros, who wrote 556 years before Christ; and in those of old Homer himself, whose writings may be dated perhaps a thousand years before the birth of our Saviour. This last author speaks of oils rendered fragrant by the perfume of the rose, and compares the fingers of the morning to its fragrant petals. This was the flower to perfect whose birth gods and goddesses strove in happy concert; it was bathed by Bacchus in nectar; Aurora caused her dews to lie thick upon it, freshening its roots; whilst Apollo's beams shone with warmth. Then with a diadem of expanding bloom, Flora's self appeared, crowning its stem, Vertumnus following hard with perfume from the blessed vale of Tempe, which fragrance it still retains, though lost somewhat by time. It would indeed have been a pity to have had this exquisitely prepared plant destroyed by one dash of the controversialists' pen! The Athenians had extensive planta-

tions of this shrub; and many were the devices they resorted to in order to preserve the flower. One of the modes adopted was to cut off the top of a reed, splitting it down a little way, and inclosing a number of rose-buds in the hollow, which being bound over with papyrus, prevented their odour from escaping. The ancients were acquainted with the common damask, the white, and the moss-rose. Pliny refers to Pangæus, a mountain of Thrace, as the native habitat of the rose; and according to Chandler, the white variety is at present cultivated in Attica. The Greeks and the Romans had an idea that the fragrance of the rose was greatly augmented by planting garlic beside its roots, an opinion which will gain but few adherents in the present day. However, they succeeded in growing it to their satisfaction; and its odour, "sweeter than Cytherea's breath," has been attested by many of the great names of antiquity. In Greece, the rose season commences in April, and with the view of getting the plants to bloom in February, they watered them twice or thrice a day with warm water.

One of the favourite harbingers of spring, both with the Greeks and the Romans, was the Hawthorn (*Crataegus Oxyacantha*). Well was it regarded with them as the emblem of hope, for it would be impossible to select a plant whose flowers would give a more lovely indication of the opening year. Druids, Celts, Saxons, Pagans, and Christians, have followed in adopting this tree as the living and beautiful type of a May-morn; and however seldom wreaths of it may be employed now-a-days in decking our rural fair ones, or in garlanding the may-pole, it will continue to be regarded as the queen of all our larger shrub flowers. The fruit of this genus is really brilliant; and any one in walking over the arboretum of the Horticultural Society at Chiswick, in October and November, will find the bushes arrayed in all the glitter of plentiful autumn. Steps should be taken by those who have estates and lands in the country to have the more beautiful varieties transferred to rural districts. As road-side trees, no genus can be compared with them. Greek girls carried the flowers in wedding processions, laying them on the altar of Hymen.

The Honeysuckle was one of those shrubs planted on lawns in front of the houses throughout Greece; and, in particular, it was selected to clamber around the pomegranate trees, which were usually placed on elevated spots; so that from the mass of odoriferous shrubs thus exposed to the winds, the evening and morning breezes wafted clouds of fragrance into the apartments of the villa. From the foot of the honeysuckle peeped the violet and other humble though sweet flowers. One of

the most beautiful ornaments of Grecian architecture is said to have been borrowed from this plant.

The Laurestinus was planted around classic villas, pretty much in the same way as it is now around the mansions of England. "In its flowers the morning dew collected and glistened in the sun like so many tiny mirrors of burnished silver."

A species of the Dogwood (*Cornus mas.*), with very showy fruit, which, however, is not often seen in England, has to be ranked as a classical shrub. The Roman poet classes it "with other savage berries of the wood;" yet, with all its faults, it was dedicated to Apollo; and on that mount where Paris adjudged the prize of beauty to the goddess Venus, he had a favourite grove of these trees, which were cut down by the Greeks, an act which greatly displeased the presiding god. To appease his anger, a festival called Cornus was celebrated in honour of this deity at Lacedæmonia. The common species (*C. sanguinea*), was also known to the Greeks and Romans; but, so far as is known, it was unhonoured.

The Heath was cultivated by the Greeks and Romans, but it is difficult to identify the species. Gerard asserts that the *Calluna vulgaris*, the common ling, or heather, is the heath "that the ancients took to be the right and true heath;" but his grounds for this opinion are not given.

There is more certainty in including some other plants of the order Ericaceæ. One of them is the common Arbutus, which must have grown profusely and vigorously with the ancients; for Virgil recommends its young shoots as food for goats in winter-time. Its rich scarlet fruit is praised in the pages of Ovid. The Rhododendron was, perhaps, rather too plentiful, both in Greece and Rome, to be taken and nursed with that peculiar care which the ancients bestowed on some others. Though not so common as we find the furze and broom in Britain, the declivities of many of the mountains were empurpled with it, and the margins of rivers stoutly fenced with its branches. The Rhododendron was very plentiful around the ancient Trapezus, where it is still found in abundance; and Xenophon relates, that when his army of 10,000 Greeks approached that city, his soldiers were seized with violent vomiting and purging, from their having eaten honey, the produce of bees fed on this plant.

A doubt exists as to whether the common Privet is entitled to full classical honours. It was, at any rate, known to the Romans; for Pliny prescribes its berries to be given to poultry when affected with certain diseases, such as the pip, &c.

One of the Periwinkles, it is thought, was

known to the ancient Greeks under the name of *Klematis*, and this conjecture is supported by the authority of Sibthorpe. If so, it was planted along with the daisy, cowslip, primrose, and veronica, in patches over the greensward.

The taste of the Greeks and Romans was strongly displayed in their love of fragrant and aromatic plants. One of the first was the Southernwood (*Artemisia Arbotanum*), now almost neglected in first-rate gardens, and found chiefly in those of the humbler classes. Its recommendations are, that it is of easy culture, highly fragrant, well adapted to grow in towns, on account of its resisting the effects of smoke, and an evergreen. Thickets of this shrub now adorn many of the islands of the Archipelago.

The Lavendar (*Lavandula spica*), was associated with the foregoing, and with the rose, myrtle, daphne, and other sweet-smelling shrubs. It was sometimes planted in masses by itself on sunny hillocks.

The Rosemary (*Rosmarinus officinalis*), was particularly prized for its delicate odour, and medicinally as a stimulant to the nervous system, comforting the brain, and strengthening the memory. It still finds a place in the old gardens of this country.

Another plant of the same favoured order is the Sage (*Salvia officinalis*), or perhaps, *Salvia triloba*, which was in great esteem amongst the ancients as a medicinal plant. This fact may be inferred from the question of the Latin poet, "Why should a man die who has sage in his garden?"

But amongst all the odorous plants which the Greeks and Romans loved to crowd into their gardens, their chief delight was the Thyme. The air even of the towns and cities of Greece was sweetened with its odour. "Thyme Greece" would have been one of the most appropriate titles of that highly-favoured country. This plant was brought in great quantities from Mount Hymettus to the gardens of Athens; and it is said the Sicyonians likewise transplanted it to their gardens from the mountains of Peloponnesus. In its native habitats it conferred a beautiful feature on the country, covering the slopes and crests of hills in the same way that the heath does in some districts of the north of Scotland. In this plant we have the true reason why the honey of Hymettus was celebrated in preference to that produced in any other part of the world; and modern bee-keepers would do well to take advantage of the hint,—it being a generally admitted fact, that the description of plants on which bees feed materially affects the honey produced by them. The flora of Pontus (*Azaleas*, *Rhododendrons*, &c.) had such an influence on the honey of the country, that

the Romans refused to receive it in tribute, and obliged the inhabitants to pay a double portion of wax in lieu of it. The variety known to the Greeks is thought to be that most generally called *lemon* thyme, which has yellowish-green leaves, grows more procumbent than the common, and is altogether of a neater habit. I have proved it to be particularly well adapted for rock-work, and I am now trying it for edgings to borders instead of box-wood. In the latter capacity it will enable us to add at least one charm to our gardens, to which the Greeks attached the greatest importance. When pressed with the foot the plant yields the most delicious smell, and when it is set about walks, the air can be filled with this fragrance at the pleasure of any one walking throughout the grounds. I have not had sufficient experience to enable me to say in what way this plant should be set as an edging; but I have adopted the plan of placing it on soil elevated a few inches, with a brick laid flat on each side. The thyme entirely covers the bricks, which serve as a guide for the hedge-shears when the edging is trimmed. This plant thrives admirably on exposed situations in the neighbourhood of the sea.

The beauty of the *Daphne Cneorum* renders it well worthy of the attention of every one forming a collection of plants valued by the ancients. It is quite a mistake to suppose that this plant thrives best in peat soil, or in a mixture of peat: its favourite soil is a dry sandy loam exposed to the sun.

The Ivy must not be forgotten, for it was one of the greatest favourites with the ancients. It was sacred to Bacchus. Acharnæ and the adjoining country was nearly ivy-bound. Here this plant maintained

"His steady triumph, laurelling himself
With crown luxurious, till his heavy hand
Was laid upon all living, and his reign
Confessed where'er he came."

Sprigs of laurel were worn by Apollo and by the poets, and Silenus was crowned with it.

One of the neatest ornamental shrubs known to the ancients was the Rock Rose, or *Cistus*, a native of Crete, one of the islands of the Mediterranean. The genus contains a few plants which stand in the open air in this

country, with a very slight protection in the winter months. One of the hardiest is the sage-leaved (*C. salviaefolius*), and this was, unquestionably, one of those grown throughout Greece. In a dry sandy soil, which had been trenched to the depth of two feet, it will attain to a large size in the course of a few years; but it is in vain to attempt to get a good-sized plant to grow, unless taken from a pot.

It is generally thought that the Cherry was introduced into Italy by Lucullus, and that thence it found its way into Greece. In the soil of the latter country, however, it found a place long anterior to the time of that Roman general, who was born about a century before Christ. It is noticed by Theophrastus, who wrote his treatise about three hundred years before the Christian era, and by a still older writer (Xenophanes), who was born about the 40th Olympiad, 620 years B. C.

Two sorts of the Plum were known to the ancients (*Prunus insititia* and *P. domestica*); but beyond the fact that great use was made of the fruit, little is known of them.

The Pear was esteemed by the Greeks, and by them it was sent to Rome. The island of Ceos was reckoned the best spot for producing this delicious fruit, which throughout Greece was brought to table floating in water.

There is a difficulty in applying all that has been said with regard to the Apple to the *Pyrus Malus*, or common apple-tree of the present day. It was customary to apply the name to all sorts of round and ruddy fruit; but there cannot be a doubt that it was known both to the Greeks and Romans, though it is difficult to say what share of their attention it occupied. The environs of Delphi and Corinth are thought to have been its most celebrated sites. According to Pliny, the Greeks called the apple *Medica*; Seckler, on the other hand, thinks that this term refers to the peach.

Such are the more striking objects whence emanated the odours, imagery, and music which we find spread over the classic pages of verse and prose. The Greeks and Romans placed much of their happiness in the contemplation of trees and shrubs, and the wisdom of such a choice has been confirmed by good men in all ages.

GARDENING CALENDAR FOR NOVEMBER.

THE CONSERVATORY.

THE general features of treatment, in this house, and also more or less in the others, must be varied according to the character of the season. Sometimes we get tolerably clear weather, and warm air in November, and if this is the case, the treatment recommended

for October may be continued, with little variation. On the other hand, should November be cold and gloomy, the treatment must be varied accordingly. It is on the supposition of the latter circumstances that we shall offer the annexed remarks.

Temperature, &c.—For the ordinary growing plants which occupy the conservatory, an average temperature of 45 degs. by day (40 degs. at night) will be sufficient; but we have all along supposed the conservatory to be—especially in winter—a receptacle for gay plants brought elsewhere into flower, rather than as being much dependent for ornamental effect on the plants which occupy it naturally; the latter, of course, if properly managed, will do much to aid this effect, but it is considered as being by no means dependent entirely on them. Under these circumstances a somewhat higher temperature must be kept up; and if the permanent plants have been rested as previously directed, the effect of this increased warmth on them will be only that of inducing them to flower in some cases a trifle earlier than they would otherwise do. From 50 degs. to 55 degs. is the temperature recommended by day; and from 40 degs. to 45 degs. at night will be sufficient. The application of artificial heat will sometimes be necessary, perhaps, but it should be used very cautiously yet; it is hardly to be expected that there will be a sufficient degree of frost to render it necessary; but in order to dry up extraneous dampness, and also to admit of occasionally purifying the interior by full or extensive ventilation, slight fires in the morning on mild days will be of service; it must be remembered, however, that the fires must not be powerful, they must be discontinued by mid-day, so as not to heighten the night temperature—which always should be kept low, and the ventilation referred to must be afforded while the fires are acting. Such a course of treatment may be followed when a warm moderately clear day offers, after some continuance of dull heavy weather, but it should not be too often resorted to; two or three days of continuous dull weather may afford occasion for it. On other occasions the house should be ventilated daily, admitting the external air at as many points as possible, and in bulk sufficient to keep the temperature somewhere near the point named; in bright intervals, however, it will rise higher, and may do so occasionally with advantage. With regard to night temperature, the house should be closed early in the afternoon; and except it be necessary to exclude frost, no fire should be applied. To ascertain when it will be necessary for this purpose—or at least when there is reason to suppose it necessary—is a matter that must be left to observation.

Watering.—The plants being mostly in a state of bloom, and not of rest, it will be necessary to keep them regularly watered. They should not get so much as blooming plants would receive at any other season, because this would be more than they would require for the exercise of their functions, and

would only serve to render the atmosphere damper than would be suitable for the preservation of the plants; but they should be just watered enough to keep them evenly moistened, in the state which has often been referred to as most suitable for growing plants. Morning watering has been already recommended. No water should be applied with the syringe, or uselessly thrown about the house. Tepid water only should be employed.

Flowers.—Whatever flowers may have been provided by gentle forcing for this house, should now be brought in; and they must be renewed from time to time as may be necessary. They should be examined every day, and the dead flowers removed; and they will probably require rearrangement about once in a week. Cleanliness and good order should be strictly preserved.

THE GREEN-HOUSE.

From this time forward until February, which period forms the winter and the ordinary resting season of plants, there are various routine matters that require occasional attention; thus, every two or three weeks the soil may be stirred up with advantage, a little of the old being sometimes removed, and new added in its place; almost daily the dead and dying leaves should be removed, at least, the most prominent should thus frequently be made the objects of attention, and at longer intervals the whole of the plants should be made to undergo formal surveillance in this respect; the sweeping out of the pathways, &c. daily, is a thing so totally inseparable from habits of order and cleanliness, that it seems hardly necessary to say this should be done.

HOUSE FOR MISCELLANEOUS PLANTS, Temperature, &c.—The temperature of this house should be maintained at about 45 degs.—from 40 to 45 degs. by day, and at night may fall as low as 35 degs. without injury to the plants. The house should be ventilated more or less daily—generally from about nine in the morning till three in the afternoon; the amount must be regulated by the weather. In mild weather all the ventilators may be opened to their full extent, while in cold, stormy, or boisterous weather, though all should be opened, it should be as little as possible; and thus between these extremes, according to the favourable or unfavourable nature of the weather, every degree of ventilation will perhaps have to be produced, and possibly the amount will require to be considerably varied in the course of the day. As regards water, but little should be used, and that in the morning, and warmed to the temperature of the house, or rather above it. No syringing should be done. Artificial heat *may* be required to exclude frost, but it is much better dispensed

with as long as possible, the necessary temperature being kept up by closing the house early in the afternoon.

Dutch Bulbs for flowering in pots, if not all potted, should be got in immediately, and plunged a few inches deep among coal ashes, or old tan : these will form a succession.

Primulas.—Pot some of the strongest seedling plants in succession into six-inch pots well drained ; these should be plants which have been allowed to throw up a blooming stem, just to see if they bring good blooms before much care is bestowed on them. Plants of the double varieties may be shifted on in succession ; these are beautiful things, and well suited for cutting bouquets.

Succulent Plants generally, should be set in a cool part of the house, (secure from frost,) and except in rare instances, will not require any water through the winter. They do not require a light position, and may therefore be set for this period on the back shelves, or even beneath the stages, so that wet does not drip on them from the plants above.

Chrysanthemums still in flower must be watered regularly, and stood where they will get a fair share of fresh air. The fading flowers should be removed, as at this dull and damp period of the year their decay is liable to injure those blooms which are yet in perfection, if they are allowed to remain. As the plants go out of flower, if a frame cannot be spared to protect them through the winter, set them close against a south wall, and pack sawdust or old tan between the pots ; they are better not cut down, as the old stems both shelter and retard the young suckers.

HEATH-HOUSE. *Temperature, &c.*—This is rather a trying month for heaths, on account of the dull damp weather which usually prevails. The best, and indeed the only way to avoid the injury to which they are liable to be exposed from this cause, is to make a constant practice of ventilating the house to as large an extent as possible. Whenever the weather is at all dry and fine, the house should be opened early in the day, and continued till the afternoon, for there is little fear of the plants in this house being injured by cold, provided they are secure from actual frost. Indeed, of all conditions which are most unfavourable to them, that of being subjected to a warm or close confined atmosphere is the most hurtful. The temperature may therefore range during this month just as this free ventilation may influence it, provided the weather is not cold enough to cause it to fall below 36 degs. in the day time. At night, it is not probable there will be frost severe enough to enter if the house is closed in good time in the afternoon ; but if severe weather of this kind should set in, the risk must be provided against

according to the circumstances. When the weather is very damp or foggy, the house must not be opened so freely, though it must not be kept closed ; and after a day or two of such weather, advantage should be taken of the first day which is at all free from fog, to apply a brisk heat early in the morning, and through the former part of the day, the house being at the same time kept as fully open as possible ; this will help to dry up some of the dampness, but the fires must be put out by mid-day, so that there may be none of their influence remaining when the house is closed, to stimulate the plants into growth. Although water is to be administered with a sparing hand, and not applied oftener than is absolutely necessary, nor scattered or dropped about in the interior of the house in any way, yet particular care must be given that none of the plants get dry at the root, for this generally produces irreparable injury, if not the destruction of the plant ; above all things, therefore, drought at the root is to be avoided.

Azaleas.—One or two of the forwardest plants may be occasionally taken into a warmer house, to cause them to develop their flowers, which they will do readily enough if gently excited.

New Holland and Cape Plants do very well under the treatment pointed out for Heaths.

Mildew.—Heaths sometimes suffer from mildew at this season of the year, which is known by their leaves and branches looking mouldy ; as soon as this is perceived dash them over with flour of sulphur, and pay attention to the ventilation already recommended ; avoid however any sudden changes in this respect, which only tend to aggravate the disease.

CAMELLIA HOUSE. *Temperature, &c.*—The ordinary green-house temperature of 45 degs. by day, or less, with full ventilation, and a low night temperature, just excluding frost, will be suitable for these plants through the winter. As regards water, they should be just kept regularly and moderately moist. No fire-heat will be required, for if cold weather sets in, it will not be severe enough to get inside if the house is closed, and so that it is just excluded is all that is required ; in fact, a little frost does not injure the plants, if they are but allowed to thaw again quietly and without exposure.

Camellias.—A few of the earliest rooted plants may from time to time be removed to the forcing-house, placing them at first in the coolest part, and never subjecting them to very powerful heat ; they will then expand their buds, and be very ornamental in the green-house or conservatory. A sudden change of any kind, or extreme condition, that is, from wet to dry, or from cold to heat, or the extreme

of heat or cold, or wetness or drought, will one and all cause them to drop their flower buds without expanding them; extremes and sudden changes should therefore be very carefully avoided.

PELARGONIUM-HOUSE. *Temperature, &c.*—This structure requires to be a little in advance of the two preceding, as regards temperature, because the plants will be slowly progressing: a very slight advance is however sufficient; and this is not to be given by any direct application of artificial heat, but by ventilating rather less fully, though not less freely, and by closing earlier in the afternoon, and watching more strictly to prevent injury from frost at night, by the slight use of fire heat when found to be necessary for this purpose. The reasons for this more generous management are these, that the plants are more in a growing state, and they are also more liable to sustain injury if submitted to frost. It is not, however, to be inferred from this, that the plants are to be nursed up tenderly, for if vigorous healthy plants are required, this would be acting in the way least likely to secure them. The house must be ventilated daily, and at every available point; the ventilators too should be opened early in the morning, but they should be closed early in the afternoon, so that the temperature may be high enough to bear up against the low outer temperature at night. The day temperature may average 45 degs. and should hardly fall below 40 degs.; while at night it cannot safely approach nearer the freezing point than 35 or 36 degs. Water just enough to keep the soil moist, but do not allow any stagnant moisture to lurk in the atmosphere, or in any way about the plants.

Pelargoniums.—Pay good attention to the thinning regulation and stopping of the young shoots, for on this attention being well followed up, much of the dwarfness and compactness of the plants will depend. Tie down the outer branches towards the sides of the pots, and get them nearer by degrees, until they are brought to hang over; this makes room for the young shoots continually forming in the centre by the stopping of the shoots, and keeps the plant bushy and well proportioned. Every shoot should therefore be topped when three or four joints in length. Attend to removing dying leaves, and stirring up the soil occasionally. Plants provided and intended for winter blooming, of course form exceptions to the recommendation to stop the branches; such as these may be removed, a few at a time, in succession to the forcing-house, to expand their flowers.

Cinerarias.—Remove the earliest plants to the forcing-house to get them into bloom; and shift on a succession of the plants so that the

supply may not be broken off; these plants require regular watering.

Calceolarias may be potted singly from the cutting pots, if not done already, and require to be kept regularly watered.

THE PLANT STOVE.

If the arrangement of the plants has not yet been properly completed, it may be done on the first opportunity. Wet days present favourable opportunities for attending to this kind of in-door work. The resting of the plants will now be a main feature in their treatment.

Temperature, &c.—During this month, when the plants will have sunk into a state of repose, and every thing likely to excite them must be avoided, a day temperature, averaging 60 degs., will be proper for them, and 50 degs. may be regarded as the minimum night temperature. Admit some air, if possible, daily; but this must be in a great measure regulated by the internal temperature, which is not to be brought too low by thoughtlessly throwing open the house to the influence of the exterior atmosphere. Fires will be required at night, but they should be no stronger than sufficient to keep up the proper night temperature; it is a good plan to have them burning more briskly through the day than at night, so as to admit of ventilation to a certain extent; but very much fire heat will not be needed at all, yet. Atmospheric moisture must be limited. Light is very essential; let the glass be kept clean.

Watering.—Many plants which are at rest, especially bulbs and tubers, will scarcely require any water, and to all, the supply must be limited. As a general rule, the plants which are nearest a state of repose will require least, though none must now get beyond a very limited quantity.

Gardenias.—When intended for early flowering, some of these should be placed where they will get a slight bottom heat, and be submitted to a comfortable warmth and moisture about the branches.

Aphelandras, Poinsettias, &c., which have done flowering, are to be cut partially down, and set by in a dry place in the green-house till the spring, when they must be brought out, cut down, and repotted, and started to make their growth. Later plants provided for winter flowering should now, of course, be encouraged in their growth.

Hedychiums may be dried off when they have done growing, and set by in a cool place till spring.

Clerodendrons.—Where these magnificent plants have done flowering, and have ripened their shoots, let them be removed to a dry place in the green-house till the spring, when

they are to be potted afresh, and started into growth; some prefer to put them in smaller pots now for convenience of storing.

Justicias, *Eranthemums*, and other plants provided for winter blooming, must be treated with a view to the development of their flowers; that is, they must have light and heat in considerable proportions, and a corresponding degree of moisture.

Creepers for early blooming next year must be now pruned, if not yet done.

Lantanas, *Vincas*, &c., should be pruned in rather closely, put into smaller pots, and set away till spring.

ORCHIDACEOUS HOUSE.

The plants here will be mostly out of flower, and will in consequence require resting treatment. The necessity of employing two houses for these plants is less important at this period of the year than in the spring, for the hardier species may be rested in a dry green-house.

Temperature, &c.—The average temperature for this month may be taken at 65 degs., far above which the heat should not be allowed to rise; at night it may fall under 60 degs. with advantage. The premature growth of the plants should comparatively be prevented by keeping the house dry and cool. Air may be admitted so as to prevent the temperature rising too high, but beyond this it is not very essential. The atmosphere must be kept comparatively dry. A cool system of treatment during resting-time is highly desirable.

Watering.—But very little water must be directly applied, and only to plants which are in a growing state, and to small plants which it would be unsafe to allow to get too dry. The plants which grow on the blocks should also be examined, and get a little moisture as they may require it.

Putting.—When any of the plants are beginning to grow, they may be potted if they require it; and should be set in a favourable position for growing, that is, at the warmest end of the house; they must also be supplied regularly with water.

Plants in baskets, or on blocks hanging near the roof of the house, will be benefited by being lowered a little further than usual from the glass, as they will not be so liable to be subjected to alternations of temperature.

Catesetums, *Aerides*, *Saccolabiums*, *Cyrtopodiums*, and such plants as have completed their growth, may be gradually allowed to get comparatively dry, and in this state may remain till the spring.

Insects.—If insects of any kind are to be found on any of the plants, let it be a work of solicitude to remove them as soon as possible. Matters of this kind afford employment for wet days and severe weather, when little else could be done with advantage.

FORCING-HOUSE FOR FLOWERS.

Temperature, &c.—At this season of the year, the temperature should be kept as steady as possible; for, as but little very bright weather is to be expected, any considerable fluctuations of heat without the accessory condition of increased light will only tend to draw and weaken the plants submitted to its influence. A variation between 50 degs. and 60 degs. will be found suitable.

Watering.—For the reasons assigned above, this operation must also be carefully attended to. The house should be kept rather dry than moist in gloomy days, there being then generally enough of moisture in the atmosphere. Be particularly careful that none of the plants during a continuance of such weather are kept too damp about the roots; such as have pans under their pots would be better set out of them, and the usual allowance of water should be considerably curtailed.

Insects.—In this confined structure vegetation will have hardly commenced before the green fly will begin its ravages. Immediately it is perceived, the best plan is to commence fumigating with tobacco, and persist in the use of the bellows as long as the pests are visible; and as, in consequence of the continual introduction of fresh plants with fresh colonies of the fly on them, they will be visible as long as the house is used, the best plan will be to fumigate every fortnight regularly, doing it effectually each time; or if the insect does not seem destroyed the next morning then give them another dose in the evening. This seldom fails to cure the evil for the time being. Be very attentive in picking over the roses for the "worm i'th' bud;" the bud may often be saved by minute and constant search.

Roses.—Introduce another batch, taking those plants which were forced at the same season last year, as before recommended. Syringe them every day, so as to wash the bark, and keep it clear of dirt and dust.

Pelargoniums.—Keep up the supply by putting in a few more. Be particular not to syringe them too much in gloomy weather, as the leaves are very liable to spot and mildew.

Hyacinths.—These should be introduced now in considerable abundance, as no flower tends so much to enliven the conservatory in the dull months both with colour and fragrance. The single varieties are far preferable for forcing at all times, but especially at this season. Bring them forward gradually, keeping them near the light when they begin to grow, in order to keep them as dwarf as possible.

Narciss, *Tulips*, &c., should also be brought forward in quantity, and in the same way as the last.

Lilacs.—Introduce more of these, syringing them well, and keeping them rather cool until they begin to break regularly, when a warmer situation will suit them.

Deutzia, *Ribes*, and many other hardy shrubs, should now be put in. Many of them may be moved out again in a very little while, and will expand their blossoms in perfection in the conservatory, after being started in the warmer house.

American Plants.—Keep up the supply, and be sure they are well syringed whenever that instrument is used, especially the evergreen sorts, and never let them become dry at the root.

Cacti.—A few plants of *Epiphyllum speciosum*, *Jenkinsonii*, and similar varieties, may be placed in heat, and be gradually supplied with water.

Pinks, &c.—A few of these, and any other herbaceous plants may be introduced, and kept in the coolest part of the house, so as to progress very gradually. They will afford a few cut flowers if not good enough for anything else.

PITS AND FRAMES.

Half-hardy Plants.—Those which are to be wintered in frames will have been placed there, and will for some time require little beyond the attention of protecting them. Water must be applied, very moderately indeed, to those which are getting dry; and for this purpose they should be looked over every day or two. The protection required during the winter is of two kinds: first from damps, and secondly from cold. The former will be most pressing in the present month, proverbial for its gloomy, cheerless character. To aid this object, the drainage and concreting of the bottom is important: it is desirable to stand the pots on a slightly raised platform of open slips of wood, the pit being provided with the means of ventilation *beneath* this. Water must not be unnecessarily spilled, nor too freely applied; plenty of air must be given in clear warm weather, so as to dry the interior as much as possible; and, except in severe frost, the pits should never be entirely closed up. During intervals of bad weather, when it is next to impossible to ventilate without injury, the internal dampness may be absorbed by introducing and renewing quantities of unslacked lime, which may afterwards be turned to useful account as a dressing. Protection from cold, beyond the shelter of the frame and lights, will probably not yet be required; if any further protection is needed, it will be afforded by throwing a garden mat over the glasses.

Alpine Plants, and other small herbaceous plants in pots, which it may be desirable to protect, should be plunged in coal ashes, old

tan, or sawdust, and protected merely from rains and severe frosts by means of shutters, thatched frames, or any other convenient materials; the coverings in the latter case being removed during the day time, unless in very severe cases. This kind of treatment may be continued till February.

WINDOW GARDENING.

Vases.—The vases appropriated to Mosses and Ferns will need no other attention than keeping them near the window in the day-time, unless, indeed, the glasses may occasionally require wiping, in consequence of the presence of too much moisture, which would condense upon the inner surface and obstruct the inspection of the plants. This condensation must necessarily take place to some extent, if the soil is moist enough for the plants, and it is only in extreme cases that it should be interfered with.

Evergreen plants, such as Myrtles or Geraniums, &c., must be kept in the light during the day, and need to be kept just moderately watered, so that the soil may not get dry. They may get some fresh air daily, when the window is opened; but should not be subjected to draughts of cold air.

Fuchsias, and other plants that shed their leaves, may be set away for the winter in a dry place, free from frost, and may be allowed to get *almost* dry.

Flowers.—The chief flower now for the window will be the small plants of *Chrysanthemum*, raised from late cuttings or layers, and blooming in small pots: these may stand inside the window-ledge. If any forced flowers are obtained, they must be set in a warmer position while they continue in bloom. If any of the pots are set in feeders, no water must be given or suffered to remain in them.

ROSE GARDEN.

Now obtain all the stocks you want, and having trimmed them as directed for last month, plant them in good open situations, keeping the different heights together, and supporting them with stakes and rods. Pot up all tender roses that have been put out in the beds and borders; and if there be any tender ones on standards, either keep prepared to cover them against frost, or else take up all the tender ones and put them together, packing their roots pretty close in the ground, and laying them sloping, as plants are laid in "by the heels," covering the roots with mould and the heads with peas-haulm or straw; by getting these altogether, they go into a smaller space, and that place can be chosen where it is the easiest to protect them,—in a warm corner, or under a shed, or in an outhouse: those which are potted up should be put in a

frame. Those roses intended to be left in beds, and seedling roses especially, should have litter of some kind laid in the alleys between the beds, so as to cover suddenly against frost. Remove standard roses and rose-bushes, and procure new ones for all the planting required. The end of this month is late enough for almost all the kinds to be purchased at nurseries; although when they are well established in gardens, they frequently retain their foliage for a long time after this period. In choosing roses at nurseries, select those with strong ripened wood, and branches pointing outwards all round the plant, and, if possible, get those which have been removed within three years, as when they have been longer, they strike deep roots, which are lost at the moving, and so considerably check the growth, as to make it necessary to reduce the head very much, and even then the growth may not be free. In transplanting these trees, the roots must be cut smooth, wherever they are torn or bruised. Some fresh loam, or dung, may be dug into any ordinary garden for all roses on their own bottoms, but almost any ground will do for roses on the common brier, for it is a free-growing subject, even when choked up in a quickset hedge, or a dry bank; so that the great anxiety to make very rich compost for standard roses is not altogether necessary. Nevertheless, it is wise, in a general way, to let all rosetums be adapted for the purpose; but the brier is so rapid a grower, that even on poor soil it carries the most vigorously growing roses. Cuttings may be still put in pots, and struck under glass, or even crowded into pots, and put under the stage in the green-house, or into cold pits or frames. In all other respects, look for directions to past months, and do every thing that has not been done already, such as potting off struck cuttings. Each month brings its own work, which is very similar from month to month, the greater part of the year, partly through the varied seasons in which the different kinds bloom, and which keeps a succession of similar labours necessary through the whole spring and summer, and part of the autumn. In all cases where cuttings are in the pots, the soil in which they are growing must not be allowed to dry, for it would be often fatal to the newly forming fibres. At the end of this month you may cut out all the small spindly branches from the entire collection, and shorten all the very long branches to half their length, or rather less, so that the wind may not have such hold of their heads to disturb their fastenings, and eventually their roots. See to their ties and stakes, that they may be well secured for the winter. The taking of potted plants for forcing into the green-house, preparatory to their going into heat, commences fairly this month; and the

same roses that were forced last year, if properly ripened, as they ought to be, are the best for forcing this. Let them be pruned to two or three eyes on each strong shoot, and cut out all the weak ones.

THE FLOWER GARDEN.

Anemones and Ranunculuses, if not planted last month, may be got in now early; they will help to produce effect in the early spring.

Auriculas.—These plants should have air in mild weather, but must not be much exposed if it is cold. When very frosty, cover the frame at night. Remove the dead leaves; stir the surface of the soil; and be very moderate in the use of water.

Beds and borders may be dug up if not already done, and kept very neat.

Bulbs.—The beds of the choicer bulbs, such as Hyacinths, Tulips, Narcissus, &c. should be protected in severe weather; it is a good plan to lay on three or four inches of decayed leaf mould, or even dry sawdust, or any material of that kind; this must however be removed in the spring. Protection by means of hoops and mats is perhaps better, but it is less neat and convenient. Any of the kinds may still be planted at the beginning of the month.

Carnations.—These require to be very carefully watered, and to have all the air that the state of the weather will permit being given to them. Decaying leaves should be removed. Picotees require precisely the same treatment.

Composts.—The various kinds of soil and decayed manure required for potting in the spring should be frequently turned over in frosty weather, and so placed as not to get soddened with wet.

Dahlias.—The roots may be taken up, and moderately dried by exposure in a dry shed, and then stored in any dry place free from frost for the winter.

Lawns.—The lawns and grass plots should be frequently poled in dry weather to distribute the worm casts, and then rolled; they should also be swept regularly, at least once a week, so as to be kept perfectly clean.

Pansies.—Those in the borders should have the soil pressed about them so as to fix them firmly in the ground, but this must be done when it is dry. Those in pots in the frames must be moderately watered, and should get abundance of air.

Pinks.—The beds of these plants should be looked to, and if the frost or worms have loosened any of the plants they should be set firm again. When the soil is dry they are the better for being gone regularly over, and pressed in firm.

Shrubs and Trees may be planted in mild

weather. Opportunities may now be taken to prune or trim any trees or shrubs which may require it. Tender and choice sorts may be protected by placing litter around the stems or over the roots.

Tulips.—If not already planted, this should be done without further delay.

Turf.—The present month is a good time to effect any alterations or additions to the lawn, which involve the laying of turf, &c.; though this may be done almost at any time.

Walks.—The sweeping and rolling of the gravel walks should by no means be neglected now, as neatness and perfect order must be some compensation for the absence of flowers.

THE KITCHEN GARDEN.

The chief operations will consist in draining, digging, ridging, trenching, and manuring—taking care to wheel on the manure on dry and frosty mornings—finishing the taking up of the various roots, and keeping the garden neat.

Asparagus.—No time should be lost in having the beds forked and covered with manure. Sea-weed is an excellent material for this purpose, and when it is not easily procurable, a little salt mixed with the dung, can be added as a substitute; use rich manure and put it six inches thick.

Beans.—If not already sown, should now be got in without delay.

Brocoli.—In case of severe weather it is well to have them set close together, so as to be easily covered.

Cabbage.—These may still be planted with success. (See last month.) Plant most of Marchless and early York.

Carliftower.—Be sure that all the air possible is given to the young plants under hand-lights; the lights may be put on only at night. It may happen that still a few heads may be found; these, along with the Brocoli—which should be regularly looked over—should be cut, and roughly dressed, and put into a close box with the ends thrust amongst sand.

Celery.—Provision should be made to be able to cover the ridges should severe weather ensue, by which means it may be preserved throughout the winter; the earthing up of the ridges should be finished rounding at the top, so as to prevent the rain and snow from lodging about the plant.

Endive.—Have plenty of endive ready for use by attending to the directions given at p. 450, as regards protecting and blanching.

Lettuce.—Attend to airing those in the frames, and allow the glasses to be always off, except during very cold weather or heavy rains.

Onions.—Now is a good time to see that the ground to be set apart for these is deeply dug, or trenched, and well dunged. Lay up the soil very rough, that it may be mellowed

and sweetened by the frost and the action of the atmosphere.

Peas.—Many prefer to sow now: it will be necessary, if the soil is wet, to form the surface into sloping banks, on which they may be sown at any time.

Rocamboles.—Plant early in the month in rows, a foot between, and similarly to shallots.

Salads.—The sowings of cress, &c., recommended to be put in a sheltered spot, will require attention and protection.

Sea Kale.—Cover the beds intended for forcing with leaves, say a foot thick; apply hot dung to that wanted very early, using pots to cover the stools; or if plentiful, lift it, and put it into the mushroom-house. The young beds should be covered with rich manure with the view of invigorating the plants; cover the soil to the depth of six inches.

Scorzonera and Salsify.—The sooner these are taken up the better; put them amongst sand in a cool house or shed.

Turnips.—If the roots are not already secured, this must be proceeded with; they will keep fresh by being put into a heap, and if the place is exposed, covered slightly with straw.

CUCUMBER FRAMES.

The present, and two following, are the most trying months of the year for Cucumbers. Where they are grown in pits or dung-beds, the heat must be kept up by linings, as they are called, of hot dung placed round the outside, and kept renewed and turned up from time to time, *before* the heat becomes spent. If they are grown in houses, which is much the best way where there is either a small house that can be devoted to them, or a stove in which they can be placed, the trouble and difficulty of keeping up a regular heat under adverse circumstances is almost done away. Keep the temperature to an average of 70 degs. by day, and 65 degs. at night, but this should vary 5 or 8 degs. according as the weather is fine or wintry; the greatest heat is to be applied when the weather is finest, and not, as is often done, when it is coldest. Have the frames carefully covered at night, and give an inch or so of air every day, if possible, to prevent the accumulation of moisture. A guide in giving air, is not to let the cold air admitted lower the temperature beyond the assigned limit. Very little water, perhaps none, need be given. The surface of the soil should be frequently stirred up and freshened. The branches should be stopped back when they have nearly filled the space provided for them; and after that, beyond every joint or leaf. In turning the linings, disturb one side only at a time, leaving the others for a few days.

FRUIT GARDEN.

Transplant, nail, and dig; in showery weather, clean nails, make shreds, and choose the frosty mornings for getting on manure to the ground. If draining is required, now is a good time to get this done; make them generally four feet deep; shallow drains are apt to hinder progress in improving soils. Pruning must now be proceeded with in good earnest.

Almonds.—Prune and treat in the same manner as the peach tree.

Apples.—When grown on walls, keep the spurs short, and every part of the tree covered with them, and only in cases where the wood is not ripened, or very weak, shorten the leaders. Be particular in cutting in the young trees; a chief point in training is beginning well, or "setting off properly." If the wall is high, train them in a fan form, but horizontal if the wall is less than twelve feet high. In standards keep the heart of the tree open, and prevent branches crossing.

Apricots.—The pruning is usually deferred until spring; yet it may be done now with advantage; leave a few spurs, but depend upon the young wood chiefly; and when nailing, use as few nails and shreds as possible.

Cherries.—The sooner the pruning of these

is finished the better; train in the fan form; and treat the morello as a peach-tree.

Currants, will be improved by manuring and digging the soil after pruning.

Figs.—Attend to having these covered with mats, straw, or any dry material: this should be done when they are quite dry.

Nectarines.—Have any of the trees transplanted if the weather is dry; but defer pruning until spring.

Pears.—Get these pruned and nailed; the horizontal form of training is preferable, except for some sorts which do well if the young wood is laid in as on Seymour's plan for peaches; in the finer sorts remove all spray, and any superabundance of buds.

Peaches.—Defer the pruning of these until February; but planting may now be done.

Strawberries.—Instead of the usual practice of digging between the rows, after the plants are thoroughly cleared of all the runners, it is preferable to top dress the beds to the depth of two inches, with a compost of dung and loam.

Vines.—Finish pruning them as early as convenient, and get them securely nailed. Cuttings of Vines may be planted any time during winter.



AGNOSTUS SINUATA.

(A. Cunningham.)

THE SCALLOPED-LEAVED AGNOSTUS.

THIS fine plant forms an exceedingly interesting object on account of its clear and erect growth, and large interesting, usually pinnatifid, or rather sinuated, leaves, which very much resemble those of some oak. It forms a tree-like shrub, with a bare stem, branching out into a head, well clothed with the leaves, which are shining and of a hard texture; they are, moreover, not always lobed, but are sometimes of a simple oblong figure. From

the axils of these spring the clusters of bright and deep orange-coloured singular flowers. The clusters consist of about a dozen blossoms, which spread out from the end of the stalk that bears them, in a horizontal manner, like the spokes of a wheel; in an early stage of development they are about an inch in length, slender, with a little knob at the end; as they advance in growth they bend regularly upwards, the slender part bursts, and the orange-

coloured style or column is protruded in a curved form on the upper side, the stigma being yet retained in the little ball or knob alluded to; the knob is formed by four oval segments, into which the end of the calyx is divided, and to the inner side of which the stamens are attached. At a more advanced stage, and apparently owing to the growth and development of the pollen, the little knobs burst asunder, and together with the slender portion become divided into four segments, which are then long and narrow, or strap-shaped; three of these bend downwards, and one upwards, each also curving backwards, whilst the style merely assumes an upward direction; the obtuse ends of the calyx are of a greenish yellow colour, the rest of the flower being of a deep orange scarlet, deepened to a dark brown-red in the centre. The entire appearance of the cluster is very singular, and very beautiful. The plant was introduced to the Royal Botanic Garden at Kew from Moreton Bay in 1830, and though rare, has been cultivated in some few establishments, but does not appear to have ever flowered in this country prior to the autumn of the present year, (1846,) when it bloomed at the United Nursery, King's-road, Chelsea. The blooming of this plant is believed to have resulted in consequence of all the branches having been topped a short time previously for the purpose of furnishing cuttings, the plant being at the time in a rather starved condition, and the wood well ripened; no doubt the hot and lengthened summer has also had much influence in inducing it to bloom. This treatment has caused it to throw out a profusion of handsome flowers from the old wood, even down the bare stem. It grows with freedom in sandy peat soil, and requires considerable care in watering. The plant here alluded to had been kept in—and the species no doubt permanently requires—an airy situation, in a temperature intermediate between that of a stove and green-house, its native place of growth being within a few degrees of the southern tropic. It is propagated by cuttings.

The genus *Agnostus* belongs to the natural order Proteaceæ, and to the Linnæan Tetrandria Monogynia; the present, the only one known in our gardens, is a very handsome species. The sketches which accompany this notice, represent one of the bunches of flowers when about half expanded (reduced one-half), a leaf (reduced about two-thirds,) and a fully expanded flower (natural size).

BLOOMING MIGNONETTE IN WINTER.

THERE is such a peculiar sweetness in the odour of the common mignonette, that it is a universal favourite. As every one knows, it is naturally a summer flower, but it is one of

those also which are made to demonstrate the triumph of knowledge and intelligence, for it is—though not without difficulty—very extensively cultivated for the purpose of blooming in winter. In fact, Mignonette is not only a universal favourite, but it is in request at all seasons of the year. Mr. Whiting, gardener to H. T. Hope, Esq., of Deepdene, has given some very good directions for winter culture, in the *Journal of the Horticultural Society*,* which we here subjoin:—

“Few flowers are more esteemed for bouquets in winter and early spring than the sweet-scented mignonette (*Reseda odorata*); it is also very useful for the decoration of the drawing-room and conservatory at those seasons of the year. Although the mignonette is not a delicate plant, yet it is not generally seen in the perfection to which it might be brought by the simple method of culture I am about to describe. To flower at or soon after Christmas the seed should be sown in the beginning of August, in pots of any convenient size. The soil should be good loam, moderately enriched with rotten dung, and kept open by a pretty liberal intermixture with old mortar or lime rubbish. It is essential that the pots be thoroughly drained, and upon the drainage a handful (more or less, according to the size of the pots) of one-year-old pigeon's dung should be placed. After sowing the seed, set the pots where they will not require frequent waterings, too much moisture being extremely injurious to mignonette; for this reason, therefore, it will be safer to place the pots in a frame or pit, where they may be covered by the lights in rainy weather. As the plants increase in size they should be gradually thinned, ultimately leaving three or five in each pot. The principal point to be attended to now is judicious watering; by this I mean giving water only when the plants really require water, and then in sufficient quantity to moisten the whole of the soil—not dribbling a few drops over the plants to-day to prevent them from being dry to-morrow—a practice too much followed with plants in pots. Pinch off any premature flowers that may appear, keep the pots free from weeds, and far enough asunder to prevent the plants from being crowded, and when they are removed to winter quarters, set them near the glass in an airy situation. A few of the plants might be placed in an intermediate house, or other situation rather warmer than a green-house, to come into bloom a little earlier than the rest.

“I have recommended the seeds to be sown in the pots, which is the method I prefer; but if more convenient, a sufficient number of

* *Journal of the Horticultural Society*, Vol. 1, Part 4, page 256.

self-sown plants might be taken up and potted, only a few extra should be put in to allow for casualties, as the mignonette transplants badly. The best mignonette I ever saw grown was treated in this way; but as it is not every gardener who can procure pigeon's dung, I may add, that guano will be found an excellent substitute. This admirable fertilizer must, however, be applied in a liquid state, and not before the pots have become well filled with roots, when a small quantity of guano, given at intervals of a week or so, will increase the vigour of the plants in an extraordinary degree. A second crop might be sown in the beginning of September, and managed in the same manner. Single plants will attain a large size in six-inch or eight-inch pots, if the main branches are pegged down as they grow, and the flowers are kept pinched off for a time."

It is by far the most desirable plan to sow the seeds at once in the pots, instead of taking up and potting the self-sown plants from the flower garden; for although mignonette *may* be transplanted, yet it does not bear this operation well, and in the hands of the inexperienced, it is more liable to prove unsuccessful than the plan of sowing in pots.

Few people are aware to what a size this annual plant may be grown under appropriate treatment, and as some persons may feel interested in the subject, we will briefly indicate what are the essential points to be kept in view. The seed should be sown in small pots, and as soon as practicable each pot should be cleared of all but one—the best—plant. This is to be very carefully re-potted as often as the roots become numerous; in the mean while every indication of flowers must be removed as soon as visible. Mr. Whiting's directions, just quoted, as to soil, situation, and watering, may be followed. This treatment may be continued till the plant has grown to any required size within reasonable limits, when it may be allowed to bloom; but on *no account* must the flowers be suffered to open while increase of size is desired. The plants may also be trained at first with a single stem, so as to form a miniature tree.

SEA KALE.

THE Sea Kale (*Crambe maritima*) is a native of the sandy sea-shore in several parts of Britain, from which situations, especially in the neighbourhood of Chichester, it appears to have been collected and used as an esculent long before its introduction as an indispensable vegetable to every garden of the least pretensions. A very closely allied species (*Crambe tatarica*) has also been introduced from the saline deserts in the neighbourhood of the Caspian Sea, and little doubt need be

entertained but it would be equally worthy of cultivation with our indigenous plant. At any rate, the experiment would be worth trying.

To maintain a regular succession of this vegetable, a portion of ground should be sown every year, or every other year at the farthest, according to the extent of the establishment to be supplied. The best soil for it will be found to be a deep, free, rich loam, which should be well trenched and manured, previous to sowing the seeds. This latter operation should be done in open weather in April. It being a plant with thick fleshy roots, penetrating deep into the soil, it is better to sow the seeds where the plants are to remain, so as to avoid breaking them in transplanting, and thus weakening them for a season or more. In order to economise the heating material when the plants are forced, the seeds should be sown in patches, from three to four feet apart every way, on beds containing at least three rows each. They should be covered about three-quarters of an inch with earth, being deposited in a ring considerably less than the size of the pots under which they are to be forced. When the young plants are sufficiently advanced, they should be thinned, leaving from four to six in each patch. Afterwards they should be kept clear of weeds, and the soil should be kept loose and deeply stirred about them, and as the leaves decay, they should be cleared away, and a slight dressing of well rotted manure should be spread over the bed, so as to protect the young crowns from damage by frost, or otherwise. The treatment the second and third years should be similar, and in the fourth they will be strong enough to begin to force, seldom sooner. The application of salt as a top-dressing has been found very beneficial to Sea Kale, as might reasonably be expected from its native place of growth.

In forcing this plant in the open quarters, it should be borne in mind that the application of heat should be very gradual, or the plants will be so watery and drawn as to possess little flavour, and the roots will be materially damaged for another season. Commence therefore to cover up the plants from six weeks to two months before you wish to eat, keeping only a gentle warmth in the linings, and checking any sudden increase of temperature by opening or turning them over. Perhaps the best material for covering the forcing pots is leaves, as they are not so liable to heat violently as dung alone. If leaves cannot be had in sufficient quantity, then half-spent dung, by itself, or mixed with leaves, will generally be found to afford a sufficient temperature to bring this plant to perfection for the table. Fresh plants should be covered about once a month in order to maintain a constant succession. The best pot for covering Sea Kale is

that made with a moveable lid, so that only the top of the covering material need be moved when cutting the produce, in which operation care should be taken to tread as little on the linings as possible, using a board to set the feet on where the plants cannot be reached without. In cutting, as little of the crown of the root should be detached as possible, merely cutting low enough to prevent the leaves from falling asunder. If, however, the plants are to be destroyed after the crop is taken, then an inch or more of the root may be cut, such part being highly esteemed by some. When the cutting is over air should be given to the plants in order to prevent the new shoots from drawing, but the linings should not be removed until all danger from frost is passed, when they should be cleared away, and the ground dug and left light and fine about the plants, treating them through the rest of the season as before recommended.

If a regular succession of crops be kept up, then a certain portion of the oldest plantations may be taken up every year, and forced in any vinery, mushroom-house, or pit, which may be in use at the time, care of course being taken that the shoots are carefully excluded from light. As these roots will not be of any further use, every leaf or shoot they throw up may be cut for use, and the former may then be thrown away. Of course, in cutting from plants forced in the open ground, moderation must be used, so that the plants are not too much exhausted, either from that cause, or by being forced too long. By taking up roots and forcing them in pots or boxes as above, all the litter and trouble attending on the out-door method may be avoided, and only the last crops taken from the natural ground, by which much labour and dirt may be avoided. It may be mentioned, that the young heads of flowers of the Sea Kale make a very tender vegetable when boiled, and it would in general benefit the plants by breaking them out, excepting only those wanted for seed.

CHRYSOBACTRON ROSSII.

(Dr. J. D. Hooker.)

CAPTAIN ROSS'S GOLD STAFF.

TOWARDS the summits of the hills, both in Lord Auckland's Group and in Campbell's Island, this plant is found, in company with others, of great brilliancy and beauty; its dense spikes of golden flowers are often so abundant as to attract the eye from a considerable distance; in some cases it is conspicuous, from its profusion, at the distance of a mile from the shore.

This *Chrysobactron Rossii* is, by Dr. Hooker, made the type of a new genus allied to *Antherium*. Hombron and Jacquenot, in the *Voyage au Pole Sud*, call it *Vcratrum Du-*

bouzeti. It is a large, tall-growing, herbaceous perennial, with fasciculated elongated tuberous roots. From the roots spring a circle of twelve or more erect spreading leaves, of a broadly sword-shaped figure, sometimes two feet long, and from two to four inches wide; they are sheathing at the base. From among these leaves rises the erect scape, often, but not always,



Chrysobactron Rossii.

solitary; this grows a foot high and upwards, and is terminated by the raceme, from four to seven inches long, of numerous crowded, golden, yellow flowers.

"Perhaps no group of islands on the surface of the globe, of the same limited extent, and so perfectly isolated, can boast of three such beautiful plants peculiar to their Flora, as the *Pleurophyllum speciosum*, *Celmisia vermicosa*, and the subject of these remarks. The last, from its greater abundance and conspicuous colour, is certainly the most striking of the three, not only giving a feature to the landscape wherever

it grows, but, in Campbell's Island, covering the swampy sides of the hills in such profusion as to be distinctly visible at the distance of a full mile from shore."

Dr. Hooker, speaking of this plant, makes the following remark :—"The specific name I have given in compliment to Sir James Ross, who during our two days' stay in this island brought to me, among many other new plants, one most luxuriant specimen of this, having three crowns of leaves from one root, and no less than seven racemes of flowers ; it was between three and four feet high. I much regretted the impossibility of preserving it whole, and the necessity there was of cutting it up into many fragments."

The plant belongs to the natural order *Asphodeleæ* (or *Liliaceæ*); and is a desideratum for our gardens. For the annexed sketch, we are indebted to the *Flora Antarctica*; but our artist has shown the spike of flowers far too much embosomed in the leaves.

SWEET HERBS.

PREVIOUS to describing the plants which are commonly known by the above designation, it may be as well to remark that the majority of them are natives of the same countries, forming, indeed, with allied plants, a marked feature in the vegetation of that region. The countries in which they thus abound are those lying round the Mediterranean Sea; their range extending back from its shores, as the country is warm, rocky, and suited to their growth. Under these conditions the Labiate order of plants form a conspicuous part of the herbage and dwarf shrubs in that part of the world.

The SPEARMINT (*Mentha viridis*) is a native of watery places in various parts of England, attaining a height of two feet, and flowering in August. There is also another native plant, found occasionally in similar situations (*Mentha crispa*), which, if in reality any thing more than a variety of the above, appears to possess the same flavour and properties.

The PEPPERMINT (*Mentha piperita*) is also indigenous in similar situations with the two above. It grows about two feet high, and flowers in August.

The PENNYROYAL (*Mentha Pulegium*) is also a native of Britain, and found in similar places with the others. It is much smaller in its growth, the shoots trailing on the ground, covered with smooth oval leaves.

Of these various species of Mint, all are grown for medicinal uses, forming the basis from which the various distilled mint-waters are procured. The first and last are chiefly planted for culinary purposes. The propagation of all of them is very simple, being generally done by parting the roots, either in

autumn, or as soon in spring as the weather is open enough. The border on which they are to be planted should be moderately well manured, and dug, and the parted roots should then be inserted in rows about a foot apart, and the plants at the same distance in the rows. They should be regularly watered until they have made good roots, and should also be kept free from weeds at all times.

In taking the crop for distilling, the plants should be allowed to come partially into flower, and then on a dry day they should be cut clean over, and removed into a shed, or other place, for immediate use, as they become speedily exhausted for distilling, if allowed to wither too much after they are cut. To dry the leaves for winter use in the kitchen, it is usual to cut the stalks when just in flower, tie them in handfuls, and hang them up in a shed, where they dry gradually, and are ready for use at any period. But a far preferable method to the above was described in one of the early volumes of the *Gardener's Magazine*. This was to gather the mint or other herbs wished to be dried, and strip off the leaves and tender points of the shoots, and gradually dry them under pressure in small boxes. This plan was carried out to a considerable extent in the state of New York, especially near Albany, and quantities of herbs so cured, and done up in sealed envelopes, were sent to Covent Garden, where they sold well, in consequence of the peculiar properties of the different herbs being better preserved than by the old method.

As Spearmint is in request in a green state as long as lamb is in season, a supply should be potted up in pots, pans, boxes, or in any other convenient way, so that a proper succession may be placed in any vinery, or other forcing house, as those previously forced become exhausted. It is as well to pot up a fresh stock every year, as the roots are hardly worth keeping after being once forced, and as the plants in the natural ground will become too thick at the root, and the produce not be strong after being three or four years planted, there will generally be roots enough to spare for forcing.

The SAGE (*Salvia officinalis*) is a native of the south of Europe, and appears to have been introduced before 1597. It forms a dwarf shrub, about two feet high, and retains its leaves all the winter, although they are sometimes much cut in very severe weather. It flowers in July. There are several varieties, as the common green, the red, the small-leaved green, and the broad-leaved. The two first are generally grown for culinary purposes, the others as medicinal plants.

The Sage prefers a dry warm exposure, where it will thrive for many years, although in general the plants become loose and mis-

shapen in the course of three or four years. To keep up a stock, therefore, a few slips should be put in every May or June, under a shady wall, in ground prepared by mixing a little sand with it if at all stiff. The slips should be taken from the side shoots of the old plants, and inserted pretty deeply in the soil, taking off the lower leaves for that purpose. Keep them moderately moist until rooted, and they may be transplanted to their permanent border either in autumn or spring. If it be desirable to dry any of the leaves for winter use, the same plan should be followed as with mint.

The CLARY (*Salvia Sclarea*) is a native of the same countries as the last, and reached this country about 1562. Like the last it is a medicinal plant, but is now seldom used in a culinary way. Being a biennial, it is best to raise it every year from seed, although it may be propagated by slips or cuttings. Sow the seed in light well prepared ground in April, in shallow drills, scattering it thinly, and if the drills are eighteen inches apart, thin the plants out to ten or twelve inches apart, and keep them clear of weeds. The leaves will be fit for use the same autumn, and until the plants flower in the following year.

The WINTER SAVORY, (*Satureja montana*), like nearly all our sweet herbs, is a native of the shores of the Mediterranean Sea, and was introduced here about 1562. It is a small shrub, rising about a foot high, furnished thickly with stiff narrow leaves, and white flowers, which appear in June. The cultivation and management of winter savory is identical with that of sage.

The SUMMER SAVORY (*Satureja hortensis*) is an annual plant, from the same countries as the last, and introduced here about the same time. It grows about a foot high, and flowers in June. Sow the seed in shallow drills in April, so that the plants when thinned may stand about six or eight inches apart. Keep them clear of weeds, and they will soon be fit for use. If any is wanted for drying, cut or pull up the plants ere they advance too far in bloom.

The THYME (*Thymus vulgaris*) is a native of the South of Europe, and was probably introduced to this country long before the beginning of the sixteenth century. It forms an evergreen shrub about a foot high, producing flowers about the middle of summer. There are three varieties, the narrow-leaved, the broad-leaved, and the variegated. The second is the best for the kitchen garden.

The LEMON THYME (*Thymus citriodorus*) is a low trailing shrub, of which the native country appears to be unknown. It has been supposed to be only a variety of the common wild thyme, with which it a little agrees in

habit, but is readily distinguished by its much paler colour, and very different scent, which, as its trivial name imports, is that of lemons.

Both the species of thyme prefer a warm, moderately dry border, and are propagated by parting the roots, or by slips. Their further culture approximates to that of sage.

Several species of MARJORAM are in cultivation—three species for kitchen use, and many for ornamental purposes. The common MARJORAM (*Origanum vulgare*) is very abundant in many parts of the kingdom, especially on chalky soils, but is seldom used now in a culinary way. If wanted for medicinal purposes, it may be collected in any quantities on the borders of woods and thickets, wherever the chalk appears. It flowers in July.

The POT MARJORAM (*Origanum onites*) is a native of Sicily, and was introduced to this country in 1759. It forms a small hardy shrub, growing about a foot high, with small acute leaves, and flowers in July. It requires to be propagated by slips, like the thyme, as it seldom ripens seed in this country.

The Perennial, or WINTER SWEET MARJORAM, (*Origanum heracleoticum*), is a native of Greece, and was introduced in 1640. It is similar in growth to the last, flowering in June, and likes a sheltered situation. Its propagation is also similar to the last.

The SWEET or KNOTTED MARJORAM (*Origanum marjorana*) is a native of Spain and Portugal, and appears to have reached England in 1640. It is of a whitish colour, being thickly covered with soft short down, and produces its flowers in terminal spikes, each spikelet being contracted into a globular head, whence its second trivial name. The flowers appear in June or July, according to the period of sowing the seed, and it should be then cut for drying for winter use. Being a rather tender biennial, it requires to be raised from seed every year, and its treatment is the same as that of the summer savory.

The SWEET BASIL (*Ocimum basilicum*) is a native of the East Indies, and was introduced to this country about 1548. It is an annual growing about one foot high, of upright growth, with oval leaves of a pale-green colour, and producing white flowers in June or July. It is preferable to the next for the kitchen.

The BUSH or SMALL BASIL (*Ocimum minimum*) is from the same country as the last, and was introduced in 1573. It is also of similar appearance, but more branching, and only about half the size in all its parts, although the flowers are so numerous as almost to hide the diminutive leaves. Its uses are identical with those of the last, although from its smaller size it is not so well worth growing.

The sorts of basil should be raised from seeds

sown in pots and placed on a hotbed in March or April. They should be potted off into small pots, in light rich soil, as soon as the plants are large enough to handle, replaced in heat, and gradually hardened off as the warm weather approaches, so that they may be turned out into a warm rich border early in June, or sooner if possible. Water and shade them for a day or two, keep them clear of weeds, and continue to water should the weather prove very dry. They will soon afford leaves and tops for use, and pull the old plants for drying as soon as they begin to flower.

The TARRAGON (*Artemisia Dracunculus*) is a native of Siberia, but has been in cultivation here since the middle of the sixteenth century. It is a rather strong growing perennial plant, rising nearly two feet high, with narrow green leaves. The young leaves and shoots are used in soups, pickles, salads, &c.; more so on the Continent than here. It is easily propagated by slips, or divisions of the root, and prefers a free loamy soil.

The TANSY (*Tanacetum vulgare*) is found wild in many parts of Britain, especially on the sandy and gravelly banks of streams and rivers. It is a strong growing perennial plant, attaining a height of three feet, the stems clothed with finely cut leaves, surmounted in July with corymbs of golden yellow flowers. Besides the common form of the plant, there is the curled leaved, and the variegated, both rather ornamental in shrubby borders. It was formerly much used in puddings, cakes, and also in domestic medicine. It can be abundantly propagated in the same way as the last.

The COMMON or POT MARIGOLD (*Calendula officinalis*) is a native of the South of Europe, and was introduced in 1573, or before. It is an annual, much branched plant, the ends of the branches being terminated by large yellow flowers, which are produced nearly all the year round, the plants standing through our ordinary winters, and flowering early in spring. It is now more grown for ornament than for any culinary use, although formerly highly prized, the flowers in particular, fresh in soups and other dishes, and dried as an article of medicine. It sports greatly from seed, the flowers varying from single to very double, and also occurring in a proliferous state, similar to the hen and chickens daisy. The colour also varies through all the shades from light yellow to deep orange. Its culture is very simple; indeed where once introduced it generally maintains its ground, seeding freely, and sending up repeated crops of young plants.

The BORAGE (*Borago officinalis*) is a plant reputed a native of this country; but

having been formerly held in high estimation as an ingredient in cool tankards, and as a medicinal plant, and also being generally found near old buildings, or in garden ground, it appears more likely to be only an introduced plant, and not a true native. It is generally found in most gardens, although seldom used now, but deserves a place for the beauty of its bright blue flowers. It may be almost left to propagate itself; for, like the last, it sheds its seed in such abundance, that more attention is generally required to keep it under as a weed, than to encourage its growth by any cultural appliances.

The COSTMARY or ALECOST (*Balsamita vulgaris*) is a plant allied to the tansy, a native of Italy, and introduced to England in 1568. It is a perennial plant, growing three-feet high, with ovate leaves, and yellow flowers, which expand in August. On the Continent it is used in salads; and in this country was formerly an ingredient, like *borage*, in cool tankards. It may be considered as entirely out of use here as a culinary plant. It is easily propagated in the same way as mint, but prefers a drier soil.

The five last described plants can hardly be considered as sweet herbs in the common meaning of the phrase, but being more or less of an aromatic or sweet flavour, and not much used in medicine at the present day, range tolerably well with those plants here, as they generally do in the garden.

The directions for culture given are not very long, but one routine applies to all the perennial sorts; perfect freedom from weeds during summer and autumn, and a good digging in winter or spring, adding at such time a coat of dung. They should all of them be renewed every four or five years at farthest, so as to always have them in good health and luxuriance.

CASTILLEJA LITHOSPERMOIDES.

(Humboldt, Bonpland, and Kunth.)

THE LITHOSPERMUM-LIKE CASTILLEJA.

THIS is a handsome herbaceous perennial plant, not hardy, but requiring the protection of a frame during winter, as it is liable to suffer from the dampness of our climate. It is a dwarf somewhat branching plant, growing from a foot to a foot and a half high, and having lanceolate-linear leaves, and dense spikes of flowers terminating the branches. The flowers are greenish white, and inconspicuous, but they are copiously surrounded by large leafy bracts, the upper half of which is of a bright deep scarlet, and gives the plant a very showy character. It is found in Mexico, near Real del Monte and Moran; also in Quito,

near Chillo, growing at an elevation of upwards of 8000 feet above the sea. Mr. J. Cattell, nurseryman, of Westerham, has also raised it from seeds received in 1845 from Texas, and it has bloomed with him during the present summer.

In a letter with which Mr. Cattell has favoured us (dated September 18th) he states as follows :—

“Seeds of this beautiful *Castilleja* were received from Texas in July 1845, without any name, but the plant was recommended to be grown as being curious and very beautiful. About November some of the plants which were raised began to show flower, but in December they damped off; the later plants kept better, and were planted in the open ground in May, where they have been in flower ever since. I am not able to say whether the plant is an annual or a perennial; three plants are now breaking up again from the bottom, but one very strong one, twenty inches in height, and which has had upwards of twenty spikes of bloom, is not yet breaking up. I have not found it seed at all without being set, but it then produces seeds in abundance; it may also be increased by cuttings, but this mode is hardly worth the trouble, as one good pod contains four or five hundred seeds. As far as I have been able to judge of its culture, I should recommend the seed to be sown about the middle and end of August, and when the plants are large enough, to be potted off and kept in a very airy pit or green-house in winter. I have reason to believe that a few degrees of frost will not be injurious to it. Probably its greatest enemy will be the short dull days of the winter months. If seeds are sown in a gentle heat in February, I think the plants would be in bloom by July. The soil in which I have grown it in pots is sandy peat and loam, but in the open ground it is planted in the common soil, which is light and sandy.”

The *Castillejas* are reputed to be difficult plants to cultivate, chiefly on account of their suffering much from the dampness of the climate during the winter months. They are also stated to grow best in peat soil, or probably in any light soil which will admit a free passage for moisture. They belong to the natural order *Scrophulariaceæ*, and to the Linnean *Didynamia Angiospermia*.

VERBENA MELINDRES.

Of all the flowers for bedding out, there is not one which surpasses this strikingly beautiful subject; and it is to be regretted that more pains are not taken to produce varieties of colour with the same habit. It may be, and is very desirable to improve the flower, but

we ought not to lose sight of the habit. The *Verbena* should be arranged in two classes; one cannot be too dwarf, the other may be shrubby: all are excellent for border-flowers; even the taller ones keep the garden lively. But the *Verbena Melindres* is exactly the kind of habit which shows off the geometrical gardens. A few plants in early spring placed a foot or even more apart, will rapidly spread and meet so as to form a close mass of green foliage nearly covered with its brilliant scarlet flowers, so close indeed to each other, that the green foliage only forms a sort of groundwork, like a green carpet richly ornamented with scarlet flowers, only just raised above it. It runs along the ground, striking root at every joint, and blooms on every inch of its growth. The only treatment it requires is to guide the shoots in the early part of the season, and in



The Verbena.

case of being disturbed by the wind, to peg them down, or, which is quite as good, fasten them down with bass matting, which should be cut into lengths of about eight or nine inches, doubled over the shoot, and dibbled into the soil, which will hold them down quite fast enough if squeezed close. Firm pegs, however, if they can be had, will save time, and as the plant strikes, can be moved from one place to another. When the plant shoots fully, nearly as far as it is wanted to fill, the end should be pinched off, and if any shoot is growing too fast, it may be checked to encourage side shoots: by these means the plant, as we have before described, forms a dense mass of foliage and bloom not six inches high. What advantage there would be gained for these geometrical gardens if we had white, pink, lilac, and purple of the same habit, instead of being obliged to resort to other flowers to make a variety; because the best of other clump flowers are poor and temporary as compared with the *Verbena*.

FLORICULTURAL DESIDERATA.

THE enthusiastic cultivator of exotic plants dives with intense earnestness into any media where he expects to find information respecting the vegetable treasures of little known and distant climes; a desire for novelties, and an ardent longing to increase the number of the objects of his cultural solicitude, form sufficient incentives to give him a keen relish for such "food for the mind" as is provided for him in "sketches of the vegetation" of foreign countries, whether they be torrid, temperate, or frigid. Some excellent papers of this class have been published in the London Horticultural Society's *Journal*, by G. Gardner, Esq., an experienced botanist, now Director of the Royal Botanic Garden at Ceylon, who spent some years of investigation in Brazil and other parts of South America. From the paper alluded to, we quote the following summary of the more important plants which remain to be introduced to our gardens from the places subsequently referred to:—

"The following plants, which from their beauty are well adapted for cultivation, still remain to be introduced to our gardens from the Organ Mountains.

"*Prepusa Hookeriana*, Gardner.—A very beautiful herbaceous plant, belonging to the natural order of *Gentians*, which throws up a stem about a foot and a half high, bearing from three to six flowers, the large inflated calyces of which, together with the stem, are of a deep crimson colour. It will only succeed in the green house, in a peaty soil kept moist, but at the same time well drained.

"*Prepusa connata*, Gardner.—A beautiful subshrubby green-house plant, requiring a peaty soil, to be kept moist, but not with stagnant water.

"*Salvia Benthiana*, Gardner.—A fine shrub about three feet high, with nearly orbicular leaves, and large scarlet flowers.

"*Salvia rivularis*, Gardner.—Suffruticose, and about four feet high. Flowers large and scarlet.

"*Escallonia organensis*, Gardner.—A very handsome shrub, about four feet high, producing dense panicles of rose-coloured flowers.

"*Bonmannia verbascifolia*, Gardner.—A fine herbaceous plant about four feet high, with a large loose panicle of orange flowers, belonging to the *Mutisia* group of *Compositæ*.

"*Lavoisiera imbricata*, De Candolle.—This is one of the beautiful Melastomaceous shrubs, with small leaves and large flowers, which are so common in the Gold and Diamond districts of Brazil. It grows naturally gregariously in a moist peaty soil.

"*Siphocampylus duploserratus*, Pohl.—A fine subsucculent species, with large flowers.

"*Napostanthus Braziliensis*, Gardner.—A fine little suffruticose plant, belonging to the Cyrtandrous division of Gesnerads, and remarkable as being one of the only two plants belonging to this tribe that are natives of the American continent. In appearance it is not unlike a species of *Streptocarpus*.

"*Citrosma obovatum*, Gardner.—A small shrub, worthy of being introduced, not only as a botanical curiosity, but for the rich lemon odour of all its parts.

"*Talauma fragrantissima*, Hooker.—A fine large tree belonging to the natural Order of Magnoliads. The flowers are large, pale-yellow, and powerfully odoriferous. It grows naturally in moist swampy places, and not unfrequently flowers when not more than ten or twelve feet high.

"*Passiflora speciosa*, Gardner.—A climber, with large scarlet flowers from four to six inches in diameter.

"There are, besides these, many fine *Compositæ*, *Cinchonads*, *Myrtle-blooms*, *Melastomads*, particularly *Pleromas*, *Bignoniads*, *Begoniads*, *Ferns*, &c., well deserving the attention of cultivators. The first eight species of this list grew at such an elevation as to entitle them to be considered greenhouse plants."

From Pernambuco the following plants still remain to be introduced as ornaments to our hot-houses:—

"*Cochlospermum serratifolium*, De Candolle.—Grows in a dry sandy soil. A beautiful shrub reaching from ten to fifteen feet in height, with straight upright branches, which at the first period of flowering are almost destitute of leaves, the few that do appear being confined to the flowerless boughs. The flowers, which are large and of a shining golden colour, are produced in large panicles.

"*Eschweilera sp. n.*—This is the smallest species of the natural order to which it belongs (*Lecythis*) that I have seen producing flowers. It would not only be very ornamental, but also a great botanical curiosity from the remarkable structure of its curious pale-yellow flowers. It grows in sandy places.

"*Hancornia speciosa*, Gomez.—The fruit of this plant, I have no doubt, could be produced in England, as the tree is small.

"*Gomphia Fieldingiana*, Gardner MSS.—A most beautiful shrub, with large bright green leaves, and long spikes of yellow blossom, also growing in very sandy places; besides this there are at least two other fine species of the same genus.

"*Norantea, sp.*—A very remarkable and truly beautiful climbing shrub. The spikes of crimson bracts and flowers are often upwards of two feet long. It grows in rather moist sandy places."

Mr. Gardner mentions also a very singular aquatic plant, called *Utricularia nelumbifolia*, which he met with in his excursions in the Organ Mountains, in Brazil :—

"What is most curious," he observes, "it is only to be met with growing in the water which collects in the bottom of the leaves of a large *Tillandsia* that inhabits abundantly an arid rocky part of the mountain at an elevation of about 5,000 feet above the level of the sea. Its leaves are borne upon petioles, upwards of a foot long, are peltate, and upwards of three inches in diameter. The flowering scape is about two feet long, and bears at its extremity about half-a-dozen large purple flowers. Besides the ordinary method of seed, it propagates itself by runners, which it throws out from the base of the scape. These runners are always found directing themselves towards the nearest *Tillandsia*, where they insert their point into the water, which gives origin to a new plant, which, in its turn, sends out another shoot. In this manner I have seen not less than six plants united to each other."

In another excursion on the same mountains, he met with the beautiful little *Epiphyllum Russellianum*, which he thus refers to :—

"The first night was spent by the side of a little stream at the foot of the steep ascent, a beautiful spot, and one near which I found many fine plants. The first that attracted my attention was what I then imagined to be a fine individual of *Epiphyllum truncatum*, in full flower, hanging from the trunk of a large tree that was bent over the stream. As I wanted to add a few specimens of it to my collection, I soon managed to put myself in possession of the whole plant, when, to my surprise and delight, I found it to be a new species. I have named it *E. Russellianum*, in honour of his Grace the late Duke of Bedford; and living plants which I then sent home are now in the gardens of England; but nowhere have I seen it well-grown. It will most assuredly never succeed in the dry heat in which the mass of the Cactus tribe grows so well. In its native country it grows in a much cooler region than its congener, *E. truncatum*. During my several journeys to and from the upper parts of the range, I always found the latter species confined to the dense virgin forests below the elevation of 4500 feet; while, from that point to upwards of 6000 feet, the former alone was always seen, either attaching itself to the stems of trees, or to the faces of shaded rocks, and flowering when the thermometer falls sometimes at daybreak to 42°."

This beautiful *Epiphyllum* is indeed seldom met with in a healthy and free-blooming con-

dition, and this account seems to explain the reason—Like many other plants it has been too much pampered in a hot atmosphere.



THE RHODODENDRON.

THE great diversity of hybrid varieties which are hardy has almost altered the character of this splendid shrub; and instead of the few species which, until late years, limited our colours to the white and dull lilae, we have every conceivable shade—from white to dark purple and deep crimson; and not long since Mr. Smith, of Norbiton, produced all the shades of yellow. This was a hybrid between the white ponticum and the yellow Azalea, and no subject is so much indebted to the cross fertilization of different species. We owe the hardy crimsons to various crosses with the magnificent but tender arboreum, which, applied to our hardy kinds, produced the robust varieties which had previously nothing to boast in the way of colour. The forms of the flower have been improved as much as the colour; and the common ponticum and maximum, in their original poverty and sameness, are giving place to the most beautiful collections of cross-bred varieties, improved in foliage, habit, and colour. The most handsome of our originally distinct species was the *cutanbiense*, the seedlings of which are inclined to sport into several shades. The habit and foliage of this species were by far the best, and were it not for the great diversity preventing it, many of them would have been named. This, however, was found to be an endless task, and after a few had been distinguished, the practice was dropped, except where the distinction was remarkable, and also scarce. The similarity of hundreds in the same way prevented this; and although

many have been begun to be distributed under particular names, the individuals finding so many seedlings come much alike, (varying, at most, but a trifle in the shade of colour,) the thing seems to have been given up. We have had *Russellianums*, and *Waterianums*, and *Cunninghamiis*, and *Smithiis*, in great abundance, the raisers having turned out whole batches of seedlings, though of fifty shades, under the same designation. *Alta-clerense* was one of the earliest and most hardy of the crimson kinds, and the most valuable. Mr. Waterer named more than anybody, perhaps, unless it were Smith of Norbiton; but as they were seedlings selected for their colour, all that came near each other were turned out as the same variety in many instances. Every year, however, now produces something new from peculiar crosses, and last year Messrs. Lucombe and Co. produced a very grand one from *campanulatum*. We have every right, therefore, to expect that much more will yet be done, more especially as all the hybrids (so called) bear seed, and give rise to such a diversity, that no one need plant two of a colour. Even the crosses between *Azaleas* and *Rhododendrons* bear seed, and there is no calculating what may be produced when the fertilization, artificially carried on, may include some of the brightest and best of the two classes. There is no plant more beautiful in a shrubbery.

THE RADISH.

The different varieties of Radish, cultivated for their roots, are all derived from the *Raphanus sativus* of Linnæus, a native of China. Some of the varieties are said to have been introduced to England in 1548; at any rate, four sorts appear to have been cultivated by old Gerard in the latter part of Queen Elizabeth's reign.

The different varieties of this root may be conveniently divided into two groups, the *Spring Radishes*, which come into use early in the year, and may be continued by repeated sowings all through the summer; and the *Autumn Radishes*, which come into use in the autumn, and some of which may be stored for winter use.

SPRING RADISHES

naturally divide into the long-rooted, and the round, or turnip-rooted, varieties. To begin with those having long roots:—

The *Long Scarlet Radish* is the same as the Early Frame, Short Top, and a host of other names, which are applied by dealers and seed-savers, when they select roots for seed possessing any quality a little differing from the common state of the plant. Very desirable varieties are thus obtained at times, but they

are seldom of sufficient stability to be worth a distinct name. This is the sort cultivated most extensively for the London markets, where colour being an object of some importance, those varieties with the most transparent skin and of the deepest hue are preferred. The top, or shoulder, of the root of this sort generally grows a little out of the ground, and the colour, whatever its shade, is equally intense to the extremity. The flesh is clear and colourless, and very crisp when grown rapidly.

The *Long Salmon Radish* has been confounded with the above, but appears to be sufficiently distinct to be kept separate. It is of a paler red colour, which is gradually lessened until the end of the root is quite white. It has nothing to recommend it before the other.

The *Long Purple Radish* is a very early variety, of very good quality, and the seed-leaves being large, it is one of the best to grow as a small salad. The root grows partially out of the ground, and is of a deep purple colour at top, becoming paler towards the extremity. The flesh is white, and good flavoured.

The *Long White Radish* grows with the root below the surface, or very little exposed, of a white colour, with transparent flesh, of a mild delicate flavour. A very old sort, and deserving more notice both from its merits and colour, as a contrast to the others. It is about a week later in coming into use than those before mentioned.

The *Long White Russian Radish* is a week later than the last, is a stronger grower, and closely approaches the Autumn varieties in several respects. The root attains a large size, and is good for a long time, not running to seed so soon as most others. The root has a thick rind, and is of a nutty, rather hot flavour. By successive sowings in a rich, moist soil, it may be had for use all through the summer.

The *Mons twisted Radish* is a long white radish, the root looking not unlike a crooked stick of horse-radish, growing about the same thickness, and being of nearly equal size throughout its length, which generally exceeds a foot. The leaves are not so strong-growing as those of the last, and the flesh of the root is white, firm, and rather insipid in taste. It is a good summer variety, as it does not soon run to seed.

Other varieties of long Radishes are named and praised, as the *Semi-long Scarlet*, and *Rose-coloured Semi-long*; but, as their names seem to imply, they are most probably merely selected from the first sort, but it is only by such selections, however, that first-rate varieties can be procured.

The same observations with regard to the selection of roots from which to save seed,

applies still more forcibly in the case of the *Turnip-rooted Radishes*, which appear to degenerate sooner than the long-rooted sorts, as might be expected, as they are further removed in structure from the original type of the species. The following sorts are perhaps all that are sufficiently distinct to be worthy of a separate description.

The *Common White Turnip Radish*, is the sort most usually grown for early use. The leaves are smaller than those of any of the long-rooted varieties, and the root when true, is round, and flattened at the top and bottom, the tap root being small and fibrous. The flesh is transparent, mild and sweet.

The *Early White Dutch Turnip Radish*, is an earlier and smaller sort than the last; the flesh not so transparent, and of a clear white colour. A very desirable variety.

The *Early White French Turnip Radish*, is earlier than the common, with larger leaves, and roots of an inverted pear shape, stained at top with purple.

The *Scarlet or Crimson Turnip Radish*, is the sort usually grown near London, and varies greatly in colour and shape, if great attention is not paid in selecting the roots. It appears to have been introduced from France about 1802. It is fit for use at the same time as the White, but is a coarser grower, and is seldom seen of so good a shape. The flesh is crisp, mild, and well flavoured.

The *Purple Turnip Radish* greatly resembles the last, except in colour; being equal to that in all respects, and is equally deserving of cultivation.

The *Yellow Turnip Radish* is a sort approaching the next section very closely; but is an excellent summer radish, not being more than a week later than those above mentioned. Its leaves are large and pale-coloured; the root is ovate, with a roughish, pale brown coat, and white flesh, which is firm, and very good, although rather hot. It will attain a diameter of three inches.

The *New Yellow short-topped Radish* is of a short cylindrical form, and is recommended as not running to flower so quickly as the long varieties in hot weather.

AUTUMN RADISHES.

THE varieties included in this section are all, or nearly all, derived from the Black Spanish, requiring, like that sort, a considerable time to arrive at perfection.

The *Round Brown Radish* is of rather irregular shape, and requires to be used comparatively young, as it is apt to become hollow. The leaves are long, and grow upright; the skin is brownish, mottled with green; and the flesh is of a greenish white colour, of mild flavour, and rather soft consistence.

The *White Spanish Radish* has an oval bulb, growing to a large size, with firm solid white flesh, of rather hot flavour.

The *Brown oblong Radish* has rather a small root, pear-shaped, with a rough brown coat, marked with white rings. The leaves are spreading, and of a dark green colour. The flesh is firm, white, with a hot taste. It is hardier than the preceding varieties, and is good for late use.

The *Black Spanish Radish* is of an oval shape, with a small tap root, and attains a large size. The leaves are long and spreading, the colour of the root is black, and the flesh is solid, white, with a hot flavour. This is the sort most usually seen in the market.

The *Large Purple Winter Radish*, or *Purple Spanish Radish*, is a white variety of great excellence, closely resembling the last, but with a purple skin.

The *Long-leaved White Turnip Radish* is a new variety of considerable excellence. The root is pear-shaped, remarkably flat at the bottom. The leaves are nearly entire, long, and narrow, distinguishing it at once from all the other varieties. The flesh is tender, mild, and excellent.

The above varieties, if sown in July, will come into use in succession through the autumn and winter. The last sort ought, perhaps, to be used as an autumn crop, as not likely to last so long in perfection as the stronger flavoured varieties.

In order to have radishes in perfection, they should be grown on a free soil, well enriched, well pulverized, and always moist in the summer time; in the winter, or early spring, a dry warm border should be chosen; but even there the surface of the earth must not be allowed to become parched or dry, or the result would be a very late and indifferent crop. In private gardens the first crop is frequently sown in a frame, or on a slight hot-bed protected by mats. About the middle of January is early enough to make and sow these beds, which may be formed of tree leaves, or dung, or both mixed, about two feet high, on which either frames and lights, or hooped sticks to bear mats, may be placed. On the surface of the dung put about six inches of light mould and leaf-mould mixed, and then sow the seed. As soon as the plants are up, all the air possible must be given to prevent them being drawn, and care must be taken to keep the bed from becoming dry by gentle waterings often repeated. These beds are also sometimes planted with potatoes, and the radishes are sown over them. The long scarlet varieties of radish are used for this crop, but a little of the white turnip radish may be mixed with the seed.

If the above plan is followed, then the first

out-door crop may be sown towards the middle of February, earlier or not as the season may promise. But if all the crops are grown out of doors, then the first sowing should be made on a light well-prepared and sheltered border, as early as the weather permits, and the beds must be protected with litter until all danger from frost is past. Lettuces, onions, and carrots are generally sown with them—sometimes one, two, or all the sorts together, in order to make the most of the situation. As soon as the weeds are troublesome they must be pulled up by hand; and if carrots are mixed with the radishes, a careful thinning of all should be made as soon as they get into the rough leaf. Continuous sowings of radishes should be made, at first about a fortnight apart, and in the summer every week, in order to keep up a supply of young and tender roots. An excellent place to grow radishes in hot weather is in the trenches between asparagus beds. The ground should be dug up lightly, plenty of rotten dung being dug in, and the seed sown and watered, and well attended to in that respect afterwards. The tall stems of the asparagus affords the young plants a most serviceable shade.

The autumn radishes should be sown in July, in a well-prepared piece of ground. Continue to water if the weather keep dry, as, if the plants get stunted in a young state, they will hardly recover themselves afterwards. When in the rough leaf, thin them out to about six inches apart, and keep them free from weeds. If any of the sorts are wanted for winter use, take them up before the frost spoils them, and store them in sand in the same way as carrots.

THE FENNEL AND ALLIED PLANTS.

THE Fennel (*Foeniculum officinale* or *Anethum Foeniculum*) occurs in such abundance on chalky cliffs, and similar places, especially in the south of England, as to render it difficult to believe it to be only a naturalized plant. Its uses as an ingredient in sauces, and for garnishing, are well known.

The varieties are trifling, except the last. They are chiefly the result of colour, as the common, green, or sweet, the dark green, and the red, the latter having a reddish or crimson tinge in the young leaf-stalks and leaves, sometimes retaining the colour through the season. The last variety is the *Finochio* of the Italians, the swelling-stalk and leaf-stalks of which are blanched, and eaten in various ways on the continent. By many this has been described as a distinct and annual species, but it is now considered only a variety of the common.

The common fennel being a strong growing perennial, attaining the height of six feet, and

the root lasting in a serviceable state several years, it should be sown or planted in a corner where it need not be disturbed, or at the end of the perennial herb border where it will not shade other things. The seed should be sown in well dug ground in March or April; if in rows, from twelve to eighteen inches apart, and the plants should be thinned out to stand six or nine inches apart in the rows. Little after attention is needed, except to keep the ground clear of weeds, and to dig between the plants, adding a little dung, in early spring. Fennel is easily forced when necessary, by potting up a few plants, and placing them in a gentle heat. If necessary the old plants will divide when three years old, and they may be so increased, but when this is desirable it is better to let one plant perfect its seed the previous season, and sow in the following spring, destroying the old plants when the young ones are strong enough to supply their place.

The *finocchio* is much more tender than the common fennel, and where it is in request, a sowing should be made every year in order to have a good succession. The sowing and culture is nearly the same as above, only that as the thick succulent flower-stems and leaf-stalks are the parts here wanted, a richer ground and finer tilth should be here maintained, and the crop should be regularly watered in dry weather. When once a good stock of plants is on hand, this vegetable may be had every day in the year, if wanted—from January until ready in the open ground by blanching and forcing, like sea-kale or rhubarb; by merely blanching or earthing up when it begins to grow in the open ground; and then when the season is too far advanced, and the first stems have got woody, by cutting them down, and blanching the fresh growth, until the frost checks the operation, when the first method comes into play again. It will, of course, be always better to use the blanching-pot, than to merely mould the plants up; as, independent of its neater look, it keeps the vegetable clean, and fitter for use. *Finochio* is highly esteemed in Italy, raw as a salad by itself, and also cooked in various ways.

DILL.

THE Dill (*Anethum graveolens*) is a native of the south of Europe, near the shores of the Mediterranean, and is said to have been introduced to this country in 1570. The scent of the plant is very aromatic; it is very similar to the fennel in appearance, but is smaller in every respect. It flowers in June in its second year's growth, being a biennial. It is used in various soups, sauces, and pickles, but not so much so as formerly, although still a good deal used in medicine.

Dill should be sown where intended to remain, as it does not bear transplanting, as is also the case with nearly all biennial plants. Select a light open piece of ground, and sow in March or April, in drills, about nine inches or a foot apart, and thin the plants out to three or four inches asunder, when strong enough. If necessary, a sowing may be made in autumn, which will stand the winter, and be in early for use in spring. A few plants left untouched in the spring, will furnish abundance of seed for the next crops.

CHERVIL.

THE Chervil (*Anthriscus Cerefolium*), if not a true native of these islands, has, like many other plants more in use in ancient days than now as condiments, established a strong claim to be considered indigenous, occurring in many places apparently wild. The young leaves were formerly much used in soups and salads, but are comparatively seldom asked for now. It is an annual plant, growing more than a foot high, and flowering in June, or later, according to the age of the plants.

If in request, frequent sowings should be made from March to August, but in general one or two sowings are enough; but in summer it soon runs to seed, and should therefore be sowed often, if wanted at all. Sow the seed in shallow drills, about nine inches apart, and water if in dry weather; keep down weeds, and thin the young plants if they are too crowded. A few plants left will supply plenty of seed. There is a variety with very much curled leaves in the French gardens.

SCORZONERA, SALSIFY, AND SKIRRET.

THE above roots being cultivated in a similar manner, and also being in season at the same time, as well as being used in nearly the same ways, will admit of being treated of under one head.

The Scorzonera (*Scorzonera hispanica*) is a native of the South of Europe, and was introduced to this country before 1576. It is a hardy perennial, the stem in the second year attaining a height of three feet, the lower leaves are long and narrow, and the compound flowers, which appear in July, are yellow. The root is long and taper, being nearly an inch thick at the crown; it has a very bitter taste, so that they require scraping and steeping in water before being cooked.

The Salsify (*Tragopogon porrifolius*) is a rather rare native of England, occurring occasionally in light moist meadows, and similar places. The root is biennial, long, and tapering; the stem rises about three feet high, with smooth leaves resembling those of the leek, even more than do those of the last plant. The flowers are purple, expanding in June, and the seeds have a feathery down attached

to them. The young stalks in the second season's growth, when the roots are useless, may be used as a substitute for asparagus.

The Skirret (*Sium Sisarum*) is a native of China, and was introduced to this country in 1548. It is a hardy perennial plant, with a stem about a foot high, the leaves near the ground are pinnate, and its white flowers are produced in July. The root somewhat resembles that of a small dahlia, each tuber being from two to three inches long.

Although the first and last of these plants are perennial, yet in order to obtain the best roots it is far preferable to raise the crop from seed every year, thus treating them all as annuals. A few plants allowed to stand over the winter will always furnish plenty of seed. They all prefer a rich, light soil, which should be trenched previous to sowing the seed. One sowing is generally enough, but where it is thought advisable to sow again, any time from the last week in March, to the first in May, will do, the sowings being a fortnight or three weeks apart; about the middle of April will be soon enough where only one sowing is made. Sow in drills, depositing the seed not quite half an inch deep. The drills should be a foot apart for the two first-named plants, and nine inches for the skirret. When the plants are well up, thin them out, so that they stand as far apart as half the width between the drills, and keep them clear of weeds, and the ground well stirred amongst them. With this treatment some of the roots will be fit for use at the end of August, and the others will continue the supply until they begin to grow again in the spring. They may be taken up when frost approaches, and stored like carrots, or as the winters are seldom hard enough to kill them, many prefer to leave them in the ground till wanted. They are boiled or stewed in various ways, and vary the supply at table in the winter, although they are not so much in demand now as formerly, when the number of vegetables procurable at that season was not so great as at present.

NEW PLANTS IN THE HORTICULTURAL SOCIETY'S GARDEN.

ONE of the most interesting features in the new *Journal* published by the Horticultural Society of London, is the account of novelties in the shape of plants and fruits, which through various channels fall into their hands, and are cultivated at Chiswick. From this source, we have already on one or two occasions quoted the descriptions given of some of these novelties; and to the same source we are indebted for the following notices:—

Abutilon rufinerve, (rusty nerved *Abutilon*.)—This is a half-shrubby downy plant,

with stalked cordate acuminate leaves, which are bordered with small crenatures, and are sometimes extended on one side into a lobe. The flowers are as large as those of *A. striatum*, erect, straw-coloured, and in twos or threes at the end of the branches. They are succeeded by ribbed, wrinkled, coarsely hairy seed-vessels. It is easily propagated by cuttings or seeds, and grows well in any common garden soil. Such treatment as is generally given to the *Hibiscus* tribe suits it perfectly. As an ornamental plant it is not of much value, for it will not prove hardy, and the flowers are not showy enough for the green-house.—*Sent by Dr. Lippold from the Rio Doce, and presented to the Society by Sir P. de Malpas Grey Egerton, Bart. M.P.*

Adamia versicolor, (various coloured Adamia.)—A fine bush, with much the appearance of *Hydrangea japonica*, so far as the foliage is concerned. The flowers, however, are quite different. They form a pyramidal panicle nearly a foot in diameter, and, when expanded, are of the most brilliant violet blue; when in bud they are at first white, but gradually change to purple and violet, until their full expansion, when they measure nearly an inch in diameter. The petals are seven or occasionally six in number, and form a seven or six-pointed star. In many respects the species agrees with *Adamia cyanea*, but its leaves and flowers are much larger, and it has twenty stamens, not ten. It is easily grown in any good soil, and requires such treatment as is generally given to *Hydrangeas* and similar plants, but it will be less hardy than they are, and will consequently require the protection of the green-house. It is readily increased by cuttings treated in the usual manner. The habit of this plant is good, and the fine large panicle of blue flowers which it bears gives it a very ornamental appearance. Moreover, if it should fruit in this country, its fine blue berries will be as pretty as the flowers.—*Mountains of Hong Kong, Mr. Fortune, July, 1844.*

Atropa acuminata, (pointed-leaved Atropa.)—This plant is very much like our European *A. Belladonna*; but its leaves are firmer, narrower, and very much tapered to the point; and the flowers are a pale dull yellow, without a trace of the chocolate colour so characteristic of the European *Belladonna*. The berries are not distinguishable. It is a hardy perennial, growing freely in any common garden soil, and easily increased either by seeds, or by dividing the old roots when in a dormant state. It grows about four feet in height, and flowers in June and July. It is only valuable as a distinct kind of Deadly Nightshade, with yellow flowers.—*Received from Capt. Wm. Munro in April, 1845, and said to have been*

collected in Chinese Tartary, at an elevation of 12,000 feet.

Clematis gracilens, (strong-scented Virgin's bower.)—A small slender climbing species, perfectly destitute of hairiness, except on the calyx and fruit. Leaves with very small ovate, three-lobed leaflets, and long straggling footstalks. The flowers are solitary, at or near the extremity of the branches, pale yellow, rather pretty, but emitting a heavy smell, which is more disagreeable than pleasant. It is a hardy climber, very neat, and well worth cultivating. It grows freely in any good loamy soil, and is easily increased by cuttings. The seed was only sown on the 17th of May, 1845, and the plant was in flower by the end of July, 1846.—*Raised from seeds presented to the Society by the Honourable Court of Directors of the E. I. Company, and collected by Capt. Wm. Munro in Chinese Tartary and the Snowy Passes, at an elevation of 12,000 feet, in October, 1844.*

Fuchsia tetradactyla, (four-fingered Fuchsia.)—A slender downy plant about two feet high, with very soft branches of a dull crimson colour. The leaves are opposite, about two inches and a half long, half of which belongs to their stalks, obovate-oblong, obtuse, a little blistered in consequence of their lateral veins being much sunken. The flowers, which are small, and deep rose colour, grow singly in the axils of the leaves. The calyx is half an inch long; the petals much shorter and paler than the lobes of the calyx, flat, blunt; and the stamens much shorter than the petals; the style longer than all, with a large star-shaped stigma divided into four fleshy finger-like rays. It is nearly allied to *F. thymifolia* and *cyndrica*. It appears to be a green-house plant. As yet it has been grown in sandy peat, but there is reason to believe that it will succeed under the same treatment as those numerous hybrids which are to be seen during the summer in every green-house. Like *F. fulgens*, it has a large fleshy root, so that in autumn it may be stowed away in any corner, where it may be kept comparatively dry and free from frost till spring. Its flowers are, however, too small to render it interesting to any except botanists.—*Guatemala; G. U. Skinner, Esq., April 4, 1846.*

Jacquemontia canescens, (hoary Jacquemontia.)—A perennial twining plant, with the stems and leaves closely covered with a short down, which is brown and white, and by no means justifies the name of *canescens* given the species by M. Kunth. The leaves are about two inches long, of a firm texture, concave, heart-shaped at the base, with an oblong outline which is rather wavy. The flowers

grow in close cymes of from nine to eleven each, on stalks somewhat shorter than the leaves. They are of a clear bright blue, and very handsome. The corolla is an inch and a half across, with a flat limb, a very short tube, and long projecting stamens. The species has been regarded by M. Choisy as a variety of *Jacquemontia violacea*, the *Convolvulus pentanthus* of gardens, but it is certainly quite distinct and far handsomer. It grows freely in soil composed of equal parts of peat and loam, mixed with a little sand. In this country it must be treated as a green-house climber, and its slender stems trained round a trellis fixed in a pot, or it may be planted out in the border of the house and trained up the rafters. In either place it will succeed very well, and flower abundantly during summer and autumn. It strikes readily from cuttings prepared in the usual way. It is a welcome addition to our collections of green-house creepers, as its habit is neat, and the flowers are of the same colour and larger than in the *J. violacea* just noticed.—*Fusagusuga*, in *Bogota*, Mr. Hartweg.

Lysimachia candida, (white flowered Loosestrife.)—This is a dwarf, compact, dark-green herbaceous plant, growing about a foot high. It is perfectly smooth. The radical leaves are narrowly oval, tapering into the stalk, and about four inches long; those of the branches are very narrow, and somewhat spatulate; all of them are very obscurely toothed at the edge, or show some tendency to be so, and are marked by scattered dark-purple dots, which are not seen unless the leaves are viewed by transmitted light. The flowers grow in close racemes, are white, and have much the appearance of those of *L. Ephemerum*, but the corollas are much larger. From the short time it has been in the garden it is impossible to state what its proper mode of treatment may be. It will in all probability prove hardy, or at least enough so for bedding out in the flower-garden. It appears to be a plant of free growth, and likely to succeed in any sort of soil. From the profuse manner in which it blossoms, it will doubtless be abundantly multiplied from seed.—*Raised from the soil contained in one of the boxes sent from China by Mr. Fortune, April 6, 1846.*

Oncidium unguiculatum, (unguiculate, or clawed-lipped Oncid.)—This is one of the finest yellow *Oncidiums* in cultivation. Its oval shining pseudo-bulbs are three inches long. The leaves are a foot long and $1\frac{1}{2}$ inch wide. The scape is three feet high, and divided into several slender straight rod-like branches, over which, at the distance of about two or three inches, are scattered the fine large flowers in a one-sided manner. They are nearly $2\frac{1}{2}$ inches long and about $1\frac{1}{2}$ inch

wide, so that they present to the eye a somewhat narrowed appearance. This is owing to the form of the lip, which is pure bright yellow, with a long stalk to the transverse two-lobed middle segment. The sepals and petals are greenish-yellow, spotted with brown. We have no *Oncidium* in cultivation to which this bears much resemblance. It is, however, apparently allied to the *O. macropterum* of Richard and Galeotti, if any judgment can be formed from the slight specific character of it, published in the *Annales des Sciences*. In that plant, however, the column-wings are said to be extremely broad, and no allusion is made to the very remarkable length of the stalk of the middle lobe of the lip.—*Purchased at a sale of Mexican Orchids.*

Platyodon grandiflorus, with semi-double white flowers.—This is a striking variety of the beautiful *Platyodon grandiflorus*, remarkable for having pure white blossoms, consisting of one five-lobed corolla placed within another so exactly that the two constitute a large white star of ten points. There is no tendency to further irregularity of structure, unless it be that the two corollas of this variety are flatter than the single one of the wild blue form. Although it is doubtful whether or not this beautiful thing will prove hardy, few will deny it room in their green-house. It appears to grow freely in any sort of soil, and to require an ample supply of water in summer. Like the generality of plants with fleshy roots, it must be put to rest in autumn, so that in winter it may be kept quite dry. In spring it may be re-potted and started to grow in the usual way. It strikes very freely from cuttings.—*China, cultivated in nursery gardens near Shanghai, Mr. Fortune, April, 1845.*

Stenanthium frigidum, (frigid *Stenanthium*.)—This is a perennial grassy-leaved plant, very much like a tuberose in appearance before it comes into blossom. It is remarkable for the dull blackish-purple colour of its flowers, which appear in drooping panicle leafy racemes at the top of a leafy stem about three feet high. The only interest that attaches to this plant consists in its poisonous qualities. From the name under which it was sent home by Mr. Hartweg (*Cebadella de tierra fria*) it may be supposed to furnish a part of the venomous *Sabadilla* seeds of commerce, from which *Veratria* is prepared. Dr. Schiede says (*Linnaea*, vol. iv. p. 226,) that the inhabitants of Mount Orizaba, where it grows wild, know it to be dangerous to the horses that bite it; and in another place that it is called the "Sevocja." It is probably a hardy perennial, requiring to be grown in peat soil and a rather moist situation during

summer. It is increased freely by dividing the old roots when in a state of rest. It flowers in June and July, and obtains a height of two or three feet.—*Common in the higher parts of Anganguco and Ajuseo, at an elevation of 10,000 feet on the mountains of El Guardo, Mr. Hartweg, February, 1846.*

Stigmaphyllon mucronatum, (mucronate-leaved *Stigmaphyllon*.)—This is a twining plant with fleshy roots and opposite ovate oblong leaves terminated by a small point. They are of a bright light green colour, and have a pair of glands on the stalk just where the leaf sets on. The flowers are of a rich canary yellow, rather larger than a shilling, with spoon-shaped brown petals, delicately fringed and wrinkled; they grow in small clusters. In this country it must be treated as a greenhouse plant. It will succeed best if planted out in the border of the house and trained up the rafters. When kept in a pot it is necessary to have a trellis made, round which the branches can be trained. Any good garden soil seems to suit it, and it strikes readily enough from cuttings. As it has a thick fleshy root, it requires but a small supply of water after it has made its growth for the season. If the species flowers freely, it will be a desirable plant owing to its neat habit, which is that of the *Stigmaphyllons* in cultivation. It is the *Banisteria mucronata* of De Candolle.—*Mexico, Mr. Hugo Finck.*

THE SORREL.

THE Sorrel (*Rumex Acetosa* of Linnæus) is a native of Britain, common in meadows and pastures, and has no doubt been always used as a salad herb, on account of its grateful acidity. Two varieties have been long cultivated in this country; for three other varieties we are indebted to our French neighbours, who so much excel us in this particular branch of gardening.

The *Common Sorrel* differs little or nothing from the wild plant, except that the richer ground of the gardens may render its leaves larger and more succulent. It is the least worthy of cultivation of any of the varieties.

The *Broad-leaved Sorrel*, is distinguished from the former by having a larger, rounder, and more succulent leaf, and is a far superior sort, and is the variety generally grown in this country.

The *Blistered-leaved Sorrel*, differs from both the preceding, in having the surface of its leaves swelled between the veins so as to appear blistered. The leaves are about nine inches long, on longish footstalks, and the flower-stems are short and late in shooting, so that the leaves are longer in a fit state to use than those of the others. It is a variety of

the broad-leaved sorrel, but it is not so acid.

The *Mountain Sorrel* (*Rumex montanus*) was formerly considered only a variety of the common species, and is a native of alpine pastures in various parts of Europe. The leaves are large, thin in texture, and of a pale green colour, about nine inches long, and slightly blistered. It is later in running to seed than the common sorrel, and is very acid in flavour.

The *Green Mountain Sorrel*, is a highly improved variety of the last, producing great quantities of leaves, which are very acid. They are of a dark shining green colour, nearly a foot long, and slightly blistered. It is the latest of all the sorts in running to seed, and is altogether the best to grow.

All these plants should be propagated by parting the old roots, as if grown from seeds they are very liable to revert to either the first or third sorts, the others being mere varieties, which soon lose their distinguishing properties, if not well cultivated. At any time during the winter or spring, in dry open weather, a border should be selected and well dunged and dug, and the roots planted in rows a foot or eighteen inches apart, according to the variety selected. They require little further attention than to keep them clear of weeds, and the ground occasionally stirred about them. The strongest and youngest portions of the roots should be selected, and inserted up to the crowns. If in good ground they will afford several cuttings during the season, ere they become too tough, or the flower-stalks rise, and even then by cutting them over and watering them if the weather prove dry; later supplies may be obtained from any old plants it may be intended to destroy in the ensuing winter.

THE ORACHE.

THE Garden Orache, or Mountain Spinach (*Atriplex hortensis*), used to be very extensively cultivated as a substitute for spinach during the summer, but is now very little grown for that purpose. A small number of plants will be found sufficient for the supply of a small family, whilst the deep colours and various veining of the leaves will recommend the varieties to some for ornamental purposes. As is the case in many other instances, this plant is much more extensively cultivated on the Continent than with us; and it would be rather difficult to assign a good reason for its almost total neglect in this country.

The original plant is said to be a native of various parts of Tartary, and was introduced to this country in 1548.

The French have a long list of varieties, and the following seven have been cultivated in this country :—

The *White Orache*, with very uneven leaves, of a yellowish green colour, acutely angled at the base. The whole plant is of a similar colour, and of rather dwarf growth.

The *Red-stalked White Orache* has leaves somewhat heart-shaped, yellowish green, with purple edges. The stem is slightly furrowed, and of a pale red colour, and of dwarf growth.

The *Green Orache*, with broad rugose leaves, acutely angled at the base, and, with the stem, are of a dark green colour. The dwarfiest variety of all.

The *Red-stalked Green Orache* has dark green, very rugose, slightly-curved leaves, angled at the base. The stem is slightly furrowed, of a deep red, and the veins of the leaves are very prominent. Grows from four to six feet high.

The *Lurid Orache*, with pale purple leaves, tinged with dark green, lightish purple underneath, with green veins. The leaves are slightly wrinkled, terminating rather acutely, and with sharp angles at the base. The stem is bright red, furrowed, with white streaks between the furrows. About the same height as the last.

The *Purple Orache* has more wrinkled leaves than the last, of a dull dark purple colour, rather blunt at the end, but sharply angled at the base. The stem is deep red, and slightly furrowed. A tall growing variety.

The *Red Orache* has leaves of an oblong heart shape, slightly wrinkled, of a dark dingy purple on the upper surface, and much brighter below. Stems deep red, and slightly furrowed.

In order to grow orache to perfection, that is, to have the leaves large, succulent, and tender, a piece of light rich ground should be selected, and prepared for sowing about the end of March or beginning of April. Sow the seed in shallow drills, from two to three feet apart; and when the plants are two or three inches high, thin them out, and keep the crop clear of weeds. The ground should be stirred deeply between the rows, and copious waterings given if the weather prove dry. They should be eventually thinned out to about two feet apart in the rows; and if a succession be wanted, the plants so thinned out may be transplanted, and will succeed the first sowing, although they will not reach the same size. A second sowing may be made towards the end of June, care being taken that they do not suffer for want of water; as on the quickness of their growth, and the abundance of their food,

depends their culinary value. In a poor soil, the leaves would be totally unfit for use. The June sowing will last during the autumn, until destroyed by the frost.

THE CHICORY.

The varieties of Chicory, or Succory (*Chicorée* of the French), are all derived from the *Cichorium Intybus* of Linnæus, a plant found abundantly on gravelly and chalky soils in various parts of Britain, and flowering during the autumn, producing large, handsome, bright blue flowers in great profusion. The wild plant generally grows from two to three feet high, but some of the cultivated varieties attain a height of eight and ten feet. It is a biennial plant, and on that account must be raised every year, as the roots, once forced, are useless afterwards.

The use of the blanched leaves of these plants as a winter salad, is very common nearly all over the Continent, especially where the winters are so cold as to preclude the preservation of endive and lettuce through the winter, except by extraordinary means, only within the reach of the wealthy. In England the cultivation of chicory can hardly be said to be practised, although Mr. Oldaker published directions for its management so far back as 1818, and others have lately attempted to bring it into use. If once fairly tried, there can be little doubt of its becoming a favourite. Its easy culture, abundant produce, and great use in salads, especially in severe winters, all combine to recommend it as one of the best culinary plants which has been neglected in this country.

The varieties of chicory are very numerous in the Continental gardens; but so little is known of them in this country, that it is of no use to attempt a descriptive list. The *Large Belgian Chicory*, grown there for fodder for cattle, and also more particularly for its roots, as a substitute for coffee, was introduced a few years ago, but is much coarser than many of the other varieties, which occur of nearly all colours, from almost white, when blanched, to a deep red, and also of all intermediate shades, blotched and striped in various ways. These coloured varieties make a very pretty addition to salads, contrasting well with the other ingredients.

To produce fine roots of chicory, a piece of rich ground should be chosen, dug deeply, or better trenched. About the end of June or beginning of July the seed should be sown thinly in drills about half an inch deep, so that it is not covered too much; the drills should be about a foot apart, and the ground should be as little trodden as possible. If the weather prove very dry, the drills should be well soaked with water before the seed is sown, and the

crop should afterwards be watered should such weather continue. Keep the crop clear of weeds, and when the plants begin to crowd one another, thin them to about four inches apart in the rows, and stir the earth deeply about them. By this treatment the roots will attain a great size by November, when they should be carefully forked up on a dry day, and the tops removed, being particular not to damage the crown of the root. They should then be carefully packed away in sand in a proper root-cellar, or other cold dry dark place, until wanted for forcing.

When required for forcing, they should be planted in pots, boxes, or any other convenient receptacles, and gently excited. If wanted for use by or before January, they would be better placed in an early vinery, taking care to thoroughly exclude the light, by covering the pots or boxes with larger pots or similar boxes. After this, a regular succession should be kept up, by potting more roots every ten days or fortnight; and as the season advances, a mushroom-house, or warm cellar, will be found sufficient to grow and blanch the leaves. Chicory will bear a heat of 60°; but except when wanted very quickly, a lower temperature will be found preferable, and the crop will be greater. If not forced too hard, each crop will afford two or three cuttings; but after that, the produce is small, and the leaves become too bitter for use. After forcing, the roots may be thrown away, being useless. If it is desirable to save seed, a few of the best roots should be kept until the spring, or left in the ground all winter, where they will generally stand very well if the soil is not very wet. They require no further management than keeping them clear of weeds, and staking the stems, to prevent the wind from breaking them.

If the roots are grown for the purpose of making them into powder as a substitute for coffee, the same routine should be followed, except that they might be sown thicker, and need hardly be thinned quite so much. When taken up, the roots may be stored away, until a convenient time occurs for preparing the powder, when they should be carefully cleaned, and cut up into small pieces not more than half an inch square. They are then to be roasted in any way most convenient, until they are of a light uniform brown colour all through, when they are fit for grinding for use. Mixed with coffee, this powder is highly esteemed by some; and, used alone, it is no doubt the best and most palatable substitute for that berry that has yet been discovered.

The common Dandelion (*Leontodon Taraxacum*) has also been grown and used in similar ways to the chicory, and its leaves afford a very good salad when they are blanched,

that operation almost entirely depriving them of the bitter flavour which they possess when grown under ordinary circumstances. If it were to be grown for its roots, to make powder with, there is no doubt but, by careful selection of seed, a greatly enlarged root might be obtained in a few generations. But this is hardly worth trying, unless this root should prove very superior to that of chicory, as a substitute for coffee.

THE SHALLOT.

The Shallot (*Allium Ascalonicum*) is a native of Palestine, and is supposed to have been introduced to this country in the year 1548. There appears to be about three varieties of this root in cultivation, either of which will be found sufficient for one place.

The *Small Shallot* is of dwarfer habit, and produces smaller bulbs than the next variety: it is also deeper coloured in the flesh, and hotter in flavour.

The *Large Shallot* generally grows double the size of the last, and is preferred by many on that account. It does not keep hardly so long as that variety.

The *Long-keeping Shallot* is said to keep for nearly two years, and not to be so subject to the maggot as the other varieties. It was introduced a few years ago from Hamburg.

The cultivation of the shallot is very simple, and as it occupies but very little space, yielding a great return, it is singular that it is not more cultivated than it is. Its native habitat, growing in the sandy plains of Palestine, points out the description of soil it prefers. The space allotted to it should be moderately rich, but not recently manured, and if the ground be naturally heavy, a layer of sand should be spread over it, and on this the bulbs should be planted, pressing them gently into the sand, and just covering them either with more sand, or with leaf mould. They should be planted about the middle of February, or later, according to the weather. The rows should be one foot apart, and the bulbs six inches asunder. As soon as the tops begin to flag and turn brown after Midsummer, take them up and lay them out on a walk or similar place to ripen and allow the tops to die off. When this is accomplished, let them be thoroughly cleaned from dead tops, dirt, and loose skins, and put them away for use in a dry airy room. The last variety is evidently the best for late use.

The shallot is very liable to rot in some soils, especially in wet seasons. This might perhaps be partially avoided by planting a month later than above recommended, and also by growing them in very poor ground. They are also very subject to the attack of maggots, very often, if not always, at the same time

that they rot. No doubt the same plans should be adopted as for the rot, and in both cases the planting in sand will be found beneficial. They have been grown very clean and handsome in sea-sand, recently taken from the beach, and applied as above recommended.

THE GARLIC.

THE Garlic (*Allium sativum*) is a native of Sicily and other countries forming the shores of the Mediterranean Sea, and was no doubt in cultivation in this country long before 1548, in which year it is said to have been introduced. Although little used in this country, it is of the first importance as an article of diet in Spain, and also in almost all Mahomedan countries, entering into the composition of an innumerable number of dishes.

The garlic should be planted in rich light ground, but not in such as has been recently manured with strong fresh dung. Having selected a piece of ground well exposed to the light, plant the strongest single cloves of the root in rows one foot apart, and nine inches from clove to clove in the rows. The best plan with this, and all bulbs grown in a similar way, is to rake the bed smooth, and if a strong soil, spread a layer of sand on the top, and then mark the rows and plant, covering the bulbs slightly with a light soil. They will soon root, and then if the bulbs are exposed to the weather it will do them more good than harm. Keep the bed clear from weeds, and hoe deeply. When the tops begin to wither, take up the roots, and dry them thoroughly, clean away all dirt and tops, tie them in bunches, and hang them up in a dry airy room.

AN IMPORTANT FEATURE IN THE CULTURE OF FLOWERS,

Not generally attended to by Florists.

ONE of the most essential points in the whole routine of gardening is, above all other essential matters, overlooked, and general instructions are so lost sight of in particular subjects, that we are called upon to set three-fourths of the most earnest cultivators right, because, in the point we are about to touch upon, they are now wrong. We allude to the necessity of changing their stocks of flowers, by obtaining the same sorts from a distant place, and sending their own away, at least once in two or three seasons. We have visited many gardens near the metropolis, and put the questions which most concerned our object, in all the cases receiving at each and every one the same answer, informing us, in fact, that ranunculuses, tulips, auriculas, carnations, pieotees, pinks, hollyhocks, and dahlias, have been grown from year to year without altering the stock,

and without any other additions than the purchases of new sorts made. In all cases the results were similar. They lost a great many every season of some particular kinds; in some other cases whole varieties were lost altogether; and in a general way they complained that they did not grow things so well as they used to grow them. Now all this is as natural a result of keeping on with the same stock, as the decline of wheat, or barley, or oats, or turnips, or any thing else that is grown from the same seed on the same ground year after year. The very person who knows it is wrong to use his own turnip seed or onion seed year after year on the same spot, actually keeps propagating his choice flowers until he can trace in his entire collection, the offspring of the first he had. Of the fatal effects of constantly working the same stock in coarser things he is perfectly aware, and practically avoids it; of the same effects visiting his more choice subjects he has never dreamed; even when he has seen the decline, he has never once thought of the cause. Habit, and seeing what others do, have so used him to take care of his choice flowers, because he knows they are right and proper, and to guard them jealously from year to year, as if none others were like them, that he no more thinks of the consequence of wearing them out, than he thinks of their flying away. We heard, as may be expected, scores of tales like this: "I have left off auriculas. I had them seven or eight years. I did very well the first two or three seasons, but I don't know how it was, they did not grow well afterwards. If I bought a lot in, they did very well a season or two, but they got worse somehow after that, so I gave them up altogether." Here is the whole history of the affair. The stock while enjoying its new place did well, but when propagated from, and the offspring kept in the same air and situation year after year, it declined. Another person, speaking of his ranunculuses, said: "They don't do well with me now; my stock never increases, and I do think some years I take up less than I plant. None of us are doing well with them about London. I had the Scotch seedlings, but they did not do well with me after the first two or three seasons. Now I have lost most of them altogether, and those that I have not lost do not come double and fine." All this but corroborates the necessity of attending to the commonest and most essential rules of gardening; not to grow the same crops on the same place, and not to use the seed of your own saving if you can get other. In large concerns you may sow seed in one field, and grow the produce in the other, but not for long together with impunity; and, as we have before shown, the man who is carrying it out with his turnips

and carrots is losing sight of it with his choice flowers and plants. We have even watched the geranium in the stock, the ordinary cultivation manifestly degenerating from year to year in the same hands, and the people silly enough to call it the degeneracy of the flower itself; but looking at the same kinds in other hands, where the occasional changes are observed, they are as much superior as almost another variety. We believe it to be quite possible to change the very constitution of a plant by culture; that is to say, change it for the worse. The excessive propagation of a fine double flower of the *Syngeneceus* kind may be propagated by rapid growth, so as to make it almost single, and we have tried year after year to get it back, but without success; and we trace some of the great disappointments in flowers to this cause. The effect is very much the same. Take a dahlia, for instance; keep it growing, and cut off the shoots as fast as the heat draws them forth. The early ones may be good, but you may keep on taking the shoots till they are fairly starved into single ones;—it is so many growths in the same spot and in the same soil. Many, however, are naturally so double that the excess hardly affects them. How many are there growing dahlias, and grumbling at their degeneracy, who never bought the sorts but once, and have grown them without changing for many years? They find some of them less certain than they used to be, and some smaller than they used to be, and they throw away some that they call worn out; but if they buy the sorts from some distant place, and throw their own away, they will be gratified at finding such a change for the better. Many have thrown away the Duchess of Richmond, because it would not come full and double as it used to do; these people have only to get it in from some distant place, and they will find it as useful and double as ever it was. It is the same with many others, which have been abandoned altogether in some localities, and are doing well in others. This it is that gives rise to a difference of opinion upon the merits of a flower, which one of the parties has seen in perfection and the other has not. In a garden once rather famed for dahlias, we saw many of the old sorts, which the party said he kept growing only because he was frequently applied to for them; there we saw also Springfield Rival with every flower bad; and all we could learn was, that they had not been good for years, but there were people who occasionally had it in collections, so they always kept it. It would be only multiplying cases to go the whole round of the flowers, and strange to say there was hardly an instance in which there was not the same admission, namely, that they had grown the subjects, and propagated from year to year

from the same stock. If it be asked why the same evil was not apparent in everything, it is answered by the very strongest fact in behalf of our position. The partial change given by potting and repotting, the changes of soil in the beds, and the additions of various dressings, counteracts in some measure the natural decline, which would otherwise be rapid: again, among dealers who do much business, there are occasional additions from distant stocks, which prevents any decline from being universal; but the main evil which will account for a thousand degeneracies exists, and we earnestly recommend every amateur who desires to shine in any one article, to make exchanges with people who are growing as well as themselves, and to remember that constantly working from the same stock is the readiest way to make it grow worse, and eventually to degenerate beyond the power of redeeming it. We do not mean here to insinuate that all things that go off fail in consequence of this oversight, because the growers of the auricula, and of carnations, and picotees, and even polyanthus may destroy a whole collection by damp alone, and carelessness may in many different ways bring a good deal of mischief; but we do say, that a vast deal more of the mischief than any body can conceive, arises entirely from constantly propagating and growing from the same stock year after year. We know there are some who will tell us that they have done so for years, and yet their plants do well and give satisfaction. We could ourselves point to Dickson's auriculas, thousands of which, in extreme rude health and strength, would appear at first sight to belie the facts we have advanced; but there are two essential things to consider; he is often receiving stock from the country, and, however well the general stock may look, we have seen auriculas, thirty years ago, grown stronger; and the same treatment of plants from the country would produce even better than he could possibly grow his own; then again, as to the plants doing well with everybody who buys them of Dickson, that does not alter our position at all, because we say his would do better anywhere than with himself, if carefully grown, and other people's, not one jot better, would grow more robust with him. Still we must not lose sight of the possibility, that a stock may be hurt so much as to almost spoil a variety for a considerable time, if not altogether; and again, potted plants are less liable to the worst mischief than plants grown out of doors in the ordinary soil, because, as we have before observed, the changes of soil counteract the decline sufficiently to make it less rapid. We do not remember to have seen or read anything upon this subject, and the propriety of

changing the stock, seeds, roots, and plants, has been so universally admitted in all edible subjects, that the manner in which it is neglected by a majority of florists of all ranks is the more extraordinary. Hundreds of fine seedlings of many kinds of flowers have fallen a sacrifice to the owners obstinately keeping them, and growing them year after year in the same place, whereby they have suffered so much as to destroy them in the end. The thought that change was necessary, never struck the raisers; they have naturally been anxious to retain all in their possession, until they have made enough to let out at a price to pay, but in this attempt the plants have been sacrificed and the variety lost to everybody. These hints will not be without their weight; they are of more importance than the casual reader may imagine; and we cannot help expressing both surprise and regret that it should be left to us to point out, even to those who know it, as well as those who do not, that they lose sight of the thing, although they must be fully aware of the consequences; and while they preach, and even practise, rightly in regard to common things of little or no value, they cultivate the most valuable subjects without any regard to so essential a point of duty.

THE CARDOON.

THE Cardoon (*Cynara Cardunculus*) is an esculent not much grown in this country, and very seldom cooked in a palatable manner, although much cultivated and highly esteemed on the Continent, where it is eaten stewed after the manner of celery, and in various other ways. The plant occurs in a wild state in the south of Europe, and other places round the basin of the Mediterranean, and was introduced to this country about 1658. It is a very strong coarse-looking plant, somewhat resembling the Artichoke, to which it is closely allied in appearance, but of a more succulent texture, and, although a perennial plant, is of no use after the first year as an esculent. The following are the most distinct varieties, although other names are to be found in use.

The *Common Cardoon* grows about five feet high, with large strong leaves, and few or no spines. This is the oldest variety in English gardens.

The *Spanish Cardoon* is a stronger plant than the last, with the leaves more hoary, and generally more spines on the leaf-stalks.

The *Cardoon of Tours* does not grow so tall as either of the preceding, is broader and more downy in the leaves, and is armed with many strong yellowish spines. The leaf-stalks are thick and solid.

The *Red Cardoon* has leaves destitute of hoariness, long and narrow. The leaf-stalks

are large, hollow, and of a deep pink colour, especially towards the base, and it is quite free from spines. It is also more tender than any of the other sorts.

As one sort is quite enough to grow, either the Spanish or the Tours variety may be selected: the former is the larger and more solid, but the latter is also solid, and is much preferred in France; it is also rather the smallest grower, and that is an advantage in small gardens. As the roots penetrate to a considerable depth, a soil of free texture, and rather light, should be chosen for them. As the tenderness of the vegetable will be increased by the rapidity of its growth, the ground should be trenched, and slightly manured if necessary, although too rich a soil might damage the flavour of the plant. When thus far prepared, about the beginning or middle of April, mark out the ground in lines, from four to six feet apart, and throw out a trench similar to those used for celery, from six inches to a foot deep, break up the bottom fine, mixing a little well-decayed dung with the soil, and sow from three to six seeds, in patches about eighteen inches apart. When the plants have acquired some size they should be thinned, leaving only one plant to each patch. During their after-growth they must be kept free from weeds, and be well watered in dry weather; indeed, they can hardly have too much moisture during the summer months. Towards the end of October a dry day should be chosen to earth them up for blanching. This may be done in nearly the same way as for celery, but a cleaner way is as follows:—having tied the leaves loosely together, begin at the base of the plant and bind it well up with haybands, as high as the ribs of the leaves are stiff and able to support themselves, leaving the top free; then, at convenient opportunities, earth them well up, nearly as high as the haybands reach, always choosing the driest weather for such operation. By this means the plants will be effectually preserved from the frost, and may be dug out to supply the table as wanted.

BEE-KEEPING.*

THERE is nothing more legitimately forms a portion of the garden establishment than Bees. To keep none is to throw away a valuable produce, in the perfecting of which we employ other agents, it is true, but not to employ them is to let others gather fruit instead of ourselves. We are not advocates for large stocks, unless people make a business of it at once; but a garden without a hive or

* "The Bee-keeper's Manual; or Practical Hints on the Management and Complete Preservation of the Honey-Bee." By HENRY TAYLOR. Third edition. London: R. Groombridge and Sons, Paternoster Row.

two of bees does not seem complete. We have seen cottagers produce their hives at Horticultural Shows, equal to any produce in quality and weight, with nothing but the common straw-hive; and from this up to the most costly bee-houses of mahogany and glass, there are things of all prices, of all forms, and pretty nearly all materials. Simplicity, however, is our motto in all things; and when we see, up to the present moment, at Horticultural Shows, the finest specimens in the world, of honey, in not only common straw hives, but also in hand-glasses, in wooden boxes, turned wrong way upwards,—in short, in almost every awkward contrivance that can be imagined, where poverty reigns, we do not look very favourably upon the costly hives and intricate methods pointed out by many writers. Bee-keeping, of old, was as common to the cottager and labourer who had a garden as the keeping of domestic poultry. It was as much part of the instruction of the children as talking, and came to them as naturally by example. No mystery was made of taking a swarm, living it in the best kind of hive that could be got at, and placing it in some sheltered situation; and among scores of plans for bee-houses, or hives, and volumes of instruction, all well calculated to amuse the bee-keeper, none appear better calculated for business than the old straw-hive, or the common inverted square box, with a hole on the top for a capping-hive, to be taken as often as it is filled. *Taylor's Bee-keeper's Manual* gives us a very good idea of the various contrivances; but the first two contrivances are the best, according to our notions, and the farther we go from the original simplicity the more difficult the management. The author says, when introducing the different kinds of hives:—"In their wild state, bees find a secure residence in the decayed trunks of the thick forest trees. Where they are domesticated, the kinds and shapes, as well as the materials of bee-hives, vary according to climate and locality, or the purse of the proprietor. The fact is, that bees will adapt their works with wonderful sagacity to the form of their dwelling; but Götien says they collect more honey in a shallow vessel than in a very deep one.

"The hives in most common use in this country are made of straw, of a bell shape, but without any provision for enlargement or ventilation. At the end of the second or third year, they are usually placed over the brimstone pit of destruction, and this closes the scene. Is it surprising that an unpleasant association is thus connected with the use of common hives? Happily for the cause of humanity, modern experience has decided that this consequence is not inevitable; and I trust I shall hereafter point out the method by which

it may be avoided in any hive, and make it appear to be greatly the interest of the proprietor never to kill a bee."

He, like ourselves, appears to favour the most simple methods of keeping them; accordingly we have him describing the most simple first.

"*Straw Hives.*—Whatever advantages other kinds of hives which we shall hereafter describe possess, those of straw, from their cheapness, must still continue to be in very general use, and it may be well therefore to point out the most eligible mode of constructing them. They are best made of unthreshed rye straw, and may be twelve to thirteen inches wide at the top, and nine inches deep within. It is an improvement to make them rather thicker than is customary; and where caps or glasses are to be used, the hive should be rather flatter on the top than is usual. In the use of straw hives it is common to put sticks across the interior, from a supposed necessity of a support to the combs. But the sticks are only an annoyance to the bees; and there is little fear of the combs falling, except in very deep hives; at any rate it may be prevented by contracting a little to the lower part. The best way of doing this is by working a wooden hoop inside the bottom band of the hive, as recommended by Dr. Bevan, who says, 'it should be perforated through its whole course, and the perforations made in an oblique direction, so distant from each other as to cause all the stitches of the hive to range in a uniform manner.' The hoop gives greater stability to the hive, preserves the lower edge from decay, and affords facility in moving it. I advise a circular piece of wood, (turned with a groove at the edge, to retain it in its place,) to be worked into the crown, having through it an inch and a half hole. With a little ingenuity, the bees may be fed through this opening,—a better method than the ordinary one at the bottom of a hive. A piece of wood or tin will commonly cover the hole; but at times it may be used for the purpose of ventilation, and allowing escape to the impure air of the hive. In this case a bit of perforated tin or zinc should be placed over it, which, when stopped up by the bees, can be replaced by a clean one. An earthen pan is a common cover to a straw hive, and this may be slightly raised by wedges on the four sides, to permit a small space underneath. Of whatever material the outer covering consists, it must project so far on all sides as to protect the hive from the least moisture. This cannot be too much guarded against; and, whether of wood or straw, all hives ought to be well painted at the beginning, and periodically afterwards; 'for,' says Mr. Payne, 'hives managed on the

depriving system, are expected to stand from fifteen to twenty years.'

Wooden Hives or Boxes.—Whatever may be said in favour of straw hives, as a cheap resource for cottagers, there is no doubt of the preference to be given to wooden ones, both in point of durability, and as affording greater convenience to the bees; for a square form is better adapted for the economical placing of the combs than any other. My boxes are made of deal, but it matters not much what wood is used, provided it is sound, thoroughly seasoned, and well put together. Different opinions are entertained as to the best size of bee-boxes, but I think that much must depend on the number of bees they are to contain, and on the honey locality, which varies exceedingly: there must also be a reference to the proposed mode of working them; for where no swarming is permitted a larger hive may sometimes be used. A good size is eleven inches square, and nine inches deep withinside; the thickness throughout being not less than an inch, or, if exposed, a little thicker. The top of the box ought to project on all sides half an inch, for better protection and appearance, and as affording convenience for lifting. On the top a two or three-inch hole should be cut in the centre, for placing a bell-glass, or small hive; and for the purpose of feeding or ventilation. In making a box it is best to leave the roof withinside unplanned; if too smooth, the bees have often a difficulty in making the first combs adhere, and they sometimes fall in consequence. A window may be placed at the back and front, or at the end, five inches high, and six wide. The glass should be thick, secured by putty; but it must not fit too tightly, or it is apt to crack from the swelling of the wood. The best and neatest way of securing the windows, that I have seen, is by a sliding shutter of zinc. Round the window there must be a projecting moulding, mitred at the corners. On one side the piece of moulding is moveable, and to the back of this is screwed a plate of sheet zinc. This passes into a rabbet to receive it, cut, on the remaining three sides, at the back of the lower edge of the moulding. For the sake of uniformity of appearance, blank windows may be made opposite to the real ones. No entrance way should be cut in the box, as this is far better made in its floor-board."

Here we feel disposed to leave company, for, as we said at starting, simplicity and economy are, to our notions, essential to all things; nevertheless we are quite aware that whoever follows up a subject enthusiastically wants to learn all he can; he can never find too much reading about his favourite hobby; and the advantage of this little manual is that we may learn from it all that is, to be learned

as to the natural history of the bee, and the numerous contrivances to render them subservient to our purposes of use and amusement. The only other quotation we shall make is that of a passage which alike concerns all the various contrivances for keeping them—namely, the situation for the apiary and the plants best adapted for their purposes. Mr. Taylor says—"I agree with Mr. Payne in the following remark:—'I have no hesitation in saying that a south aspect is decidedly preferable to any other position for an apiary. I have tried various aspects, but the bees in the south I have always found to be the healthiest, and to collect the largest quantity of honey. It is very important that the hives should be sheltered from the wind by trees or houses, and that they are not placed in the vicinity of ponds or large rivers, for the high winds will dash them into the water, where numbers will perish.'

"Circumstances may interfere to prevent placing the bee-stands in the exact position here recommended, in which case they may be turned a few points east or west; but at all times a preference should be given to the former, for the afternoon sun ought to be avoided, if possible. Indeed it is a mistake to suppose that a hot sun is required to shine on bees. A little at the entrance of the hive in the morning is all that is desirable.

"I prefer placing the bees on a grass-plot, the drier the better; and, if not otherwise well sheltered from the wind, planted with evergreens, particularly at the back and towards the south-west. Nothing high should be allowed immediately in front, nor towards the south-east; but a few shrubs, of no greater height than the alighting-boards of the hives, are rather an advantage as a resting-place to the bees on their return from work; for, from apparent fatigue, they frequently fall to the ground just on reaching home. All should be kept clean and well mowed around, and nothing offensive be permitted to remain in the vicinity.

"When once fixed do not move your bees, the mischief of which I have often witnessed. I cannot enforce this recommendation better than Gelieu has done. 'I have seen people,' says he, 'shift about their hives very inconsiderately; but change of place invariably weakens them, as the bees will return to their old residence, the environs of which are so familiar to them. A hive should remain as fixed to the spot as the ancient oaks, in the hollows of which they delight to establish themselves: where they have their young, their companions, their beloved queen, and all their treasures. When the young bees take wing for the first time, they do it with great precaution, turning round and round, and

fluttering about the entrance, to examine the hive well before taking flight. They do the same in returning, so that they may be easily distinguished, conducting themselves nearly after the same manner as the workers of a newly hived swarm. When they have made a few hundred excursions, they set off without examining the locality; and returning in full flight will know their own hive in the midst of a hundred others. But if you change its place you perplex them, much the same as you would be if, during a short absence, some one lifted your house and placed it a mile off. The poor bees return loaded, and, seeking in vain for their habitation, either fall down and perish with fatigue, or throw themselves into the neighbouring hives, where they are speedily put to death. When hives are transported to a considerable distance, there is no fear that the bees will return. But this inconvenience would be sure to take place, and many of them would perish, if they were removed only a few hundred paces from the spot they have been accustomed to. The hive may not perish, but it will be greatly weakened. In my opinion, if the situation is to be changed at all, they should be removed at least a mile and a half. This ought only to be done in winter.

“Bee Pasturage.”—Mr. Payne says, ‘I have always found the advantage of planting in the vicinity of my hives a large quantity of the common kinds of crocus, single blue hepaticas, *Helleborus niger*, and *Tussilago Petasites*, all of which flower early, and are rich in honey and farina. *Salevia nemorosa*, (of Sir James Smith) which flowers very early in June, and lasts all the summer, is in an extraordinary manner sought after by the bees, and when room is not an object, twenty or thirty square yards of it may be grown with advantage. *Origanum humile*, and *Origanum rubescens*, (of Haworth) and nignonette may also be grown. Cultivation beyond this, expressly for bees, I believe answers very little purpose.’

“I should add to this catalogue, white alyssum for the spring, &c., borage for the later months. The neighbourhood of willows in the spring is of great advantage. After all, the certainty of a large gathering of honey must depend on the nature of the surrounding country. The most highly cultivated districts are seldom so favourable to bees as those in which wild heaths, commons and woods prevail; or where white clover, saintfoin, buck-wheat, mustard, cole-seed, turnip seed, &c., are produced in quantity.”

THE HORSE-RADISH.

THE Horse-radish (*Armoracia rusticana*) is found in a wild state in various parts of Great Britain, but little doubt can be entertained that it is an escape from cultivation. The

difficulty of eradicating it when once it has taken possession of a favourable spot, is so great, and its increase so rapid, that it is not surprising it should be considered as indigenous, when found in such situations.

The Horse-radish delights in a moist, sandy soil, and in order to grow it in perfection a piece of ground as near that quality as may be should be selected, and well manured. In March proceed to half trench it, about eighteen inches deep, well mixing the manure with the soil. The best plan is to plant as the trenching goes on, as is done in the market gardens about London. The way is to take out the first spit, or more, if very long roots are required, and then to deeply dig or break up the bottom of the trench. In the ground so broken up make holes with a dibber of sufficient size, and drop into each a strong crown, cut from old plants with an inch or more of root left to it. The holes should be in rows, a foot or more apart, and about nine inches asunder in the rows. When the trench is planted, proceed with the next, turning the top spit on to the planted portion, and levelling as the work progresses. If the soil is very stiff, the holes should hardly be so deep, or else the ground should be thoroughly trenched over in the first place, and the holes made afterwards as deep as wanted, the sets put in, and the holes filled up with finer soil. By this plan very superior roots may be obtained.

When the roots are taken up—and a crop of this plant ought to rotate as well as any other—the ground should be trenched again, and every particle of the roots carefully taken out, or the next crop will be greatly inconvenienced, as every little bit will grow. Should any spring up, continual hoeing, or better, forking out, must be persevered in, until it is thoroughly extirpated. The cultivation of this root on the plan here indicated, will be found far superior in every way to the old slovenly practice of allowing the plants to retain possession of a waste corner for years, never affording a decent root, and always, summer and winter, an eyesore to all possessing the least claims to taste, order, or neatness.

THE NASTURTIUM.

THE Nasturtium generally cultivated in gardens for its seeds is the *Tropæolum majus*, of which there are now a great number of varieties, the flowers varying in colour from a dark brown to a light scarlet or orange. It is a native of South America, where, and in Mexico, it appears to have been cultivated from time immemorial. It is a very ornamental plant, highly useful for covering fences or waste spots, growing so rapidly as soon to cover a great space. Its culture is very simple, any soil appearing to suit it, even the

poorest, although, of course, in rich ground its progress will be more rapid. In the end of April or beginning of May, draw drills at the bottom of a fence, or wherever a row of them may be wanted, and scatter the seed very thinly, covering them about an inch deep. As soon as they are up keep them free from weeds, and if necessary, stake them with strong bushy pea-sticks: they will soon cover them, and the display they make, up till the setting in of frost, will amply repay the trouble, while a very few plants will furnish seeds enough for any family. They are much liked by some as a pickle, and also as a substitute for capers. The young leaves and flowers also form a grateful salad.

Another species, the small Nasturtium, (*Tropæolum minus*), is also a very elegant plant, and from its size is much better adapted for small gardens than the foregoing. It seldom extends more than two or three feet on the ground, rising about one foot high, with small roundish leaves, and deep orange and scarlet flowers. These latter are produced in great abundance, and are succeeded by seed-pods, smaller than in the other sort, but equally good for pickling. The culture, of course, is similar to that recommended for the last.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

AUTHORITIES.—*Journal of Horticultural Society*, JI. H.S.—*Gardener's Gazette*, G. G.—*Gardener's Chronicle*, G. C.—*Gardener's Journal*, G. J.—Quotations from which are duly acknowledged by the respective initials attached to each.

PROPERTIES OF THE ANTIRRHINUM.—We are not aware that any determinate properties have been propounded by which to determine the relative merits of seedling varieties. In the absence of such a definition, we offer the following:—The habit to be densely branching; the flowers in a short close spike, equal on all sides, and standing out from among the foliage. The individual flowers should be large; if self-coloured bright and clear; if variegated, the markings must be also clear and distinct, and contrast well with the ground colour; the segments or lobes of the upper and lower lips should be entire, and broad in proportion to their length—that is, as broad as long, and the less reflexed the better. It is a character of the plant to have the middle one of the three lobes of the lower lip smaller than the others.—*G. J.*

THE GARDENER'S CHRONICLE gives the following Directions for the Production of certain Crops, with a view to lessen the Consumption of Grain in the ensuing Twelve Months:—

CABBAGE SPROUTS.—Take up the cabbage stumps, both of early and late kinds, that have

sprouted; strip off all the sprouts but one of the strongest, by inserting a small knife just above the sprouts about one-fourth of an inch deep, and tear down with them thin slips of the stump about an inch in length; plant them out as common cabbage plants; they will strike root, and grow as readily, and will cabbage sooner. Like a cabbage plant, it will receive less check if watered in dry weather, but watering is not absolutely necessary; the ground should be fresh dug. The old stump should be planted slantingly in the ground, so as to cover up all but the sprout, which will cabbage something earlier than the other sprouts. The earlier this is done, the better chance will there be for their coming into use in the winter; they will, at all events, be the first for use in spring.

RAPE.—The rape that has been sown as a seed crop for next harvest may be profitably planted out for greens, in rows from $1\frac{1}{2}$ to 2 feet asunder, the plants standing $1\frac{1}{2}$ foot from each other. If this is done soon, they will give a good cutting of greens in the winter, with a second smaller one in the spring. Rape seed sown in September, and possibly in October, thinly, on ground manured as for potatoes (short manure and ashes are best), will give a crop of plants in the spring which will make excellent and very tender greens. A rood, statute measure, will require 10lbs. of seed; a rood, Irish, 16lbs., and more if not evenly sown. It will cost 4d. a pound.

CRESTS OF TURNIPS.—When the turnips (Swedes and others) are in course of being consumed, take the crests (that is, the upper part of the turnip between the bulb and the top, from which both have been cut off), and plant them; they will soon send out fibrous roots all round between the skin and the flesh, and will throw up tops in the spring as good as the original ones.

LETTUCE.—The seed sown in September, and early in October, will stand in the seed-beds through the winter, and transplanted in February and March, will come in very early in summer; they are very valuable in a raw state for feeding swine, and are good for man with salt alone. They may be planted out in rows 1 foot asunder, and stand about 8 or 9 inches from each other. The brown or Bath Cos and Hammersmith, the black-seeded Cos, the brown Dutch Cabbage, and many others, will answer. The seed-bed should get a good sprinkling of seed.

BEANS.—In sheltered grounds the Mazagan, or (perhaps more to be recommended) the Russian Bean may be sown in October, and will produce green beans for use towards the end of June; sown in February (the usual time), they will come in a little later; give them plenty of room, and they will produce

thirty or forty-fold. I have had a hundred-fold. They may be followed by the broad bean, or by later sowings of themselves. I have always found the Mazagan surer and more productive; they may be sown all over a ridge from 6 to 9 inches apart, and gathered from the furrow. But I should recommend their being sown in a single row along the centre of the ridge, and about 6 or 8 inches from each other, filling the ridge with cabbages, turnips, parsnips, or other low-growing crop. In this way a much larger quantity of beans than might be supposed would be obtained without any loss in, or injury to the other crop.

MAIZE OR INDIAN CORN.—The green stalks of Maize are very large, soft, and juicy, and the juice is so sweet, that a syrup as sweet as sugar is made of it. The usual time of sowing it is April; it may be sown in rows 2 feet asunder, and the seed dropped from 6 inches to a foot. This would also answer well, like the beans, sown in a single row along the centre of the ridge in which low-growing crops were planted. The green stalks, bruised and boiled and the juice squeezed out, would, in the latter part of the summer, thickened with a little meal, make nutritive and palatable food, and from its sweetness would be well liked by children. Though a slow ripener it is a quick grower; and although it has not yet ripened in Ireland, it has, I believe, produced its seed. These in a green state are boiled and eaten as peas by the Americans, and are much esteemed. In this state they might come into use at the end of August.—[This crop cannot be advantageously grown, in *England*, under the circumstances assumed, unless in places very mild and much screened from easterly winds.]

BROCOLI AND CABBAGES.—The Walcheren Broccoli, sown early in September and planted out under glasses (as cauliflowers are) in England, gives a succession in spring. It is probable, but we have no experience of it, that many of the broccoli sown in September or early in October, and left in the seed-beds, would stand our winters without protection; and with a view of obtaining supplies of a most excellent vegetable early in summer, the experiment is well worth trying, the only risk a few shillings' worth of seed. If it succeeded, the return at only one halfpenny a head would be four guineas for every shilling. I would recommend the Walcheren and the Wilcove Broccoli; the latter is named from a village near Plymouth. I consider the only danger is in the possibility of their starting in the spring, and in which case they would still make delicious greens. The sowing of cabbage-seeds both of early and late kinds, may also be ventured on. The seed-beds

should be well manured, ashes entering into the composition of the manure; and, need I say, should be weeded early and constantly. The beds should, if possible, run in a direction from south-east by east to north-west by west, with a side-slope towards the sun of 1 foot in 4 of the breadth of the beds. In severe weather, and at night, and in frosts, it would be well done to afford them the shelter of some description of covering to check the radiation of heat from the surface, such as prepared calico at 6*d.* a square yard, the common thin calico at 2½*d.* or 3*d.* a yard, the common garden matting, or even a little straw. But all covering should be removed in open weather, or the plants will be too tender. An ounce of good seed, affording 2,000 or 3,000 plants, may be sown on not more than 10 square yards of a seed-bed, if the seed is evenly and carefully sown. The expense, therefore, of a covering, would not be much, and it would be well repaid. A sod, 6 inches thick, laid on each side of the bed, and a few sticks thrown across, would support the covering, which should be pegged down to the sods. A line, with little loops, might be run along the edges of it. The slope given to the beds will not only give them a more direct face to the sun, but a fall for the rain from the covering.—*J. M. Gooddiff.*—*G. C.*

GARDENS IN LONDON.—There is more mischief in the want of free air than in the presence of smoke, hence all plants succeed better on the top of a house than on the ground. In the miserable walled slips that are to be found behind some houses, plants hardly move; they are, as it were, at the bottom of a pit. The fresh air blows along the house-tops, but below it is not free; the stagnant air that reaches the bottom may be whirled round and round, and form a little eddy; but there it remains, like the smoke in a chimney, when particular winds prevent its escape. Of course, the wider the space that a garden occupies, the more the air is distributed, the more likely the fresh breeze is to reach the ground. Vegetation, therefore, is more healthy in the squares than in small gardens; but if those who delight in plants would grow some on the house-tops, even in the heart of London, they would find much more gratification than they could anticipate from the appearance of London gardens.

PRESERVING WALNUTS.—There is some difficulty in keeping these fresh for any considerable time. By the following plan they have been kept in good preservation for two years:—Clean off the outer skin, and place them, when quite dry, in an earthen jar, in layers, alternating with layers of dry sand, tying them at top to exclude the air. Set the jars in a cool dry place.

*Musa chinensis.*

THE MUSA, OR PLANTAIN TREE.

THE Musas are the representatives of a group of plants, or natural order, which, in connexion with those represented by the arrow-root (*Maranta bicolor*) and the ginger (*Zingiber officinale*), form a distinct assemblage of monocotyledonous plants, which has been called the Amomum alliance, from its containing the genus Amomum, some species of which furnish the cardamoms of medicine.

The Musas are large growing plants, even as cultivated in our hothouses, where they have a noble appearance, unexcelled in this respect even by the Palms. They are, indeed, commonly associated in idea with the Palm family, from which, however, they are very distinct. The leaves of the Musas are among the largest with which we are acquainted, sometimes measuring many feet in length, and two or three feet in width, and mostly of a regular oblong figure. Some of the species afford a great abundance of valuable food in the tropics—such, for instance, as the Banana and Plantain; and a Chinese species, now cultivated in our gardens, is eligible as a fruit-bearing plant under artificial cultivation. The young shoots of the Banana are also eaten as a delicate vegetable. The leaves of some of the kinds are used for thatching Indian cottages, and for making baskets; and one spe-

cies (*M. textilis*), which we believe is not introduced, yields a most valuable flax, from which some of the finest muslins of India are prepared. Scarcely any plant shows better the nature and the structure of what botanists call spiral vessels, that is, slender twisted spiral fibres, which occur among the other tissues of plants. They are very numerous in these plants; and if the stalk or principal veins of any one of the leaves is broken and the two pieces pulled apart, they will be seen to be united by numbers of these spiral threads, so elastic that the pieces may be pulled widely asunder without breaking them. They even exist in such numbers that they are pulled out by handfuls, and are said to be collected in the West Indies and sold as a kind of tinder. The juice of the fruit, as well as the lymph of the stems of the Musas, is slightly astringent and diaphoretic.

There are three species which are more usually grown in stove collections, and six others are recorded as being introduced and cultivated; but some of these are seldom seen.

Musa paradisiaca (common Plantain-tree) has an herbaceous stem, rising from twenty to thirty feet high, of a light green colour, with pale green leaves, in full-grown specimens measuring from six to seven feet long, and

two feet or more in width. The spadix or flower-spike, which in these plants always grows from the centre of the leaves, is drooping, often measures upwards of four feet in length, and bears a quantity of fruit, each of which measures eight or nine inches in length by an inch and a half in diameter, and, when ripe, is of a pale yellow colour. It fruits in this country, but the fruit is usually insipid. It is a native of the tropics, where various cultivated varieties both of this and the following are met with.

Musa sapientum (Banana-tree) has a purple stem, sometimes marked with dark spots, and grows from twenty to thirty feet high. The leaves are as large as those of *M. paradisiaca*, but more flaccid, and tinged with purple; the spadix is drooping; the fruit is shorter than in that kind, more pulpy, and better flavoured. It is a native of the tropics.

Musa chinensis (Chinese Plantain-tree) is

a dwarf plant, growing from three to five feet high, with drooping bunches of flowers, having brownish-coloured spathes, and much shorter, thicker, and broader leaves than the preceding. It is also more prolific, and bears an immense weight of fruit. This kind, which is that best suited for cultivation in this country as a fruit-bearing plant, is a native of China; and is known in some collections as *M. Cavendishii*, a name given to it in compliment to the Duke of Devonshire.

The other species, which are grown chiefly on account of botanical interest, are the following:—

Musa coccinea (scarlet-flowered Plantain-tree) grows from six to eight feet high, and has the spadix erect. The leaves are obtusely lanceolate; the stalk and leaves are of a yellowish green, and the spathes scarlet at the base. It flowers freely in the stove, and remains a long time in flower. Native of China.



Musa coccinea

Musa rosacea (rose-coloured Plantain-tree) in some degree resembles *M. paradisiaca*, but is smaller, growing twelve or fifteen feet high; the flowers grow erect in clusters round the stem, and the spathes are rose-coloured; the fruit is oblong, but sparingly produced, and not of any value. Native of Mauritius.

Musa superba (superb Plantain-tree) grows ten or twelve feet high, with lanceolate elliptical leaves, five feet long, and nearly two feet wide; the spathes are reddish brown. It is a native of the East Indies.

Musa maculata (spotted stalked Plantain-

tree) is from the Mauritius, and grows ten feet high; *Musa ornata* (ornamented Plantain-tree), and *Musa glauca* (glaucous Plantain-tree), are both from the East Indies, the former growing six or eight, and the latter ten or twelve feet high; *Musa nepalensis* (Nepal Plantain-tree) is, as its name imports, a native of Northern India, and grows six or eight feet high. Other species are known, but not introduced.

The engravings will convey a general idea of the appearance of these plants, and of the fruit which they produce. The str

of the bases of the leaves closely folded together; at the lower part of this stem the central bud is situated; this latter, when the leaves are fully developed, pushes upward, and bears the flower and fruit. Having once flowered, the stem perishes and is succeeded by young stems or suckers from the base, which speedily acquire size and strength.



Fruit of the Musa chinensis.

The fruits of the Plantain grow in clusters weighing sixty pounds and upwards. When grown in tropical countries they assume a pale yellow colour in a ripe state, and vary from six to nine inches long, and upwards of an inch in diameter; the outer skin is tough, but it encloses a pulp which is soft, and of a luscious sweet taste. It is a most valuable fruit to those who reside in tropical climates. Three dozen plantains are stated to be sufficient to support a man for a week much better than bread. When used in place of bread, they are roasted or boiled just as they become full grown; they are also eaten boiled

with salt meat or fish. When ripe they are dried and preserved as a sweetmeat, or are made into tarts, or sliced and fried with butter. The Banana has a shorter and rounder fruit, and the pulp is softer and more luscious; it is used in the same way as the plantain; from it also are prepared a drink like cyder, and an excellent marmalade. The Chinese plantain bears fruit of exquisite flavour, and being dwarf and very prolific, it is well adapted for artificial cultivation, as an adjunct to the dessert.

The culture of these plants is very simple where the means are at command. They require stove temperature; a healthy atmosphere suitable for stove plants will suit them. Their growing period should if possible be made to accord with our summer, when they can hardly get too much heat and moisture; in winter they may rest in a cooler place. Their growth should never be checked; and being of large growth, if not planted out they must have large tubs to grow in, and must be provided with rich loamy soil, and frequent supplies of liquid manure. In fine, they require very liberal and encouraging treatment when growing, in order that they may become strong. When they have grown so far as to develop all their leaves, the spadix of flowers soon follows; and all the while these and the fruit are progressing, the same liberal treatment must be continued. As the fruit approaches maturity they may be kept somewhat drier, and as soon as some of the fruit begin to ripen, the cluster should be cut and hung up in a dry room, where they will ripen in succession. In a short time afterward, when suckers make their appearance from the base, the old stem may be cut away, the suckers carefully separated, and planted singly in pots or tubs suitable to their size, from which they must be removed to larger ones as they progress in growth, their subsequent treatment being that briefly sketched out above.

GARDENING CALENDAR FOR DECEMBER.

THE CONSERVATORY.

WINTER management will now have to be adopted more or less generally, and continued through next month, and probably part of February. But it should not be forgotten, that in intervals of mild weather, which often occur, a more generous system of management ought to be followed at those particular times.

Temperature, &c.—The temperature will vary with the use to which this house is applied. If, as has been all along supposed, it is intended to be kept constantly gay, by

bringing in forced and other flowers, a temperature of from 50 to 55 degs. by day, and about 48 degs. at night, will be necessary; but if it is filled chiefly with planted out specimens of green-house shrubs, and is managed principally with reference to them, 45 degs. by day will be fully high enough, and several degrees lower will be sufficient for the night temperature. The application of heat should not be too freely resorted to; in fact, if the temperature can be maintained by closing the

sashes early in the afternoon, and enclosing some of the sun's warmth, and there is not a prospect of frost during the night, artificial heat is better dispensed with. As regards frost, it is always a matter of judgment when fires are necessary to counteract its effect; and as heat applied when not required is so much waste, as well as being injurious, we can only recommend watchfulness in this particular, which should not be lost sight of until quite late in the evening, and should be made an early morning's thought. When frost does not exist to any injurious extent at night, it sometimes increases in intensity in the morning, and this especially requires to be attended to; for it not unfrequently happens that the whole amount of injury done by frost takes place about day-break. Those who would cultivate plants successfully, must not grudge the early and late attention. Slight fires in the day time will sometimes do good in drying up superfluous dampness, but they should be made when the weather is dry and mild, so that good ventilation may at the same time be afforded. Ventilation is an important matter in the winter season; it is desirable always to admit as much fresh air as can be done, but this must not be carried so far as to lower the temperature below what would be a desirable point; and especially as regards its admission, it is important that it should not be let in in large volumes, but distributed as evenly as possible over the whole structure, by opening every one of the ventilators to that extent which will make the aggregate amount of ventilation required.

Watering.—In all plant-houses, the water employed during winter should first be warmed to the temperature of the house, and it should in most cases be applied only in the morning, so that no unnecessary dampness (which would render the condition of the plants more hazardous as respects a sudden and unexpected fall of the temperature) may be occasioned at night. Syringing may be dispensed with, and no water should be unnecessarily thrown about the house, to cause undue dampness. Plants in bloom or growth should be watered just enough to keep the soil moderately moistened, and those which are in a dormant state should have considerably less than this amount.

Insects, &c.—At various intervals during the winter advantage should be taken of spare time to have the plants carefully examined, and all insects, especially the scale insects, removed. All those plants with thick leaves, such as Oranges and Camellias, should have the leaves washed when dirty.

Flowers.—The supply of flowers must be kept up from the forcing-house; they should frequently be re-arranged, so as to give them

an appearance of freshness, and all the dead and decaying flowers should be looked to, and removed daily. The beds should be raked, and the paths swept; if stone, whitened, so that every thing may always bear the impress of order.

THE GREEN HOUSE.

This is, perhaps, the most inactive month of the year, so far as plants are concerned; and, in fact, except in the case of those which are being excited for some special object, it little matters how inactive they remain; the more inactive they are, all other points being equal, the more likely are they to pass through the trying ordeal of winter management unharmed. In a general way, nothing whatever should be done to disturb the repose of the plants, but every thing should be resorted to which is likely to secure it. Much fire heat may be economised, if the houses are provided with shutters covered with asphalted felt, to be put on at night to exclude frost.

HOUSE FOR MISCELLANEOUS PLANTS.—*Temperature, &c.*—A low temperature is proper now, in order to secure the repose of the plants; 40 degs. is high enough, but sometimes on fine days the temperature will rise higher than this. At night, so that frost is excluded, nothing more will be required. To effect this, no doubt, fires will be necessary, but fire heat, it must be remembered, becomes injurious when it is carried beyond its legitimate purposes of protecting the plants; no more fire heat should, therefore, be given at night, than will serve to keep the temperature to about 34 or 35 degs., and the amount of heat required to effect this, will of course depend on the degree of exterior cold. Except in very severe weather, no fire heat will be required in the day time, unless it be occasionally lighted for the purpose of drying the interior of the house, which must at the same time be freely ventilated. The state of the weather must regulate the degree of ordinary ventilation; some fresh air should be admitted daily, and on mild days the house should be opened as much as possible; in very severe weather it will only be safe to open the ventilators a little way during the middle of the day; of course ventilation is not to be carried so far as to let in frost. In regard to watering, the plants will divide into two classes; bulbs at rest and succulents, which will require none, or perhaps, just a little at long intervals, to prevent their shrivelling; and shrubby or other plants, not growing to any extent, but not quite so inactive as the former, which will require to have just enough to prevent their getting quite dry. No dampness should be suffered about the house, nor should any water be spilled or dropped about unneeces-

sarily. Use water which is rather above the temperature of the house.

Seedling Plants, &c.—During the winter small seedling plants require much attention, as they are liable to perish; this is sometimes occasioned by neglectful watering, chiefly in giving them too much water; but it is sometimes caused by the dampness of the atmosphere, and the want of fresh air. Delicate seedlings cannot, however, bear much cold air. It is also sometimes caused by neglecting to remove the first vestiges of decay, which soon spreads, if not taken in good time. The same remarks apply to young plants raised from cuttings, &c.; and, in fact, to delicate subjects of more mature age.

Chrysanthemums, as they go out of bloom, should be removed to a south or west wall, and plunged in old tan, sawdust, &c.

Melocacti.—These, which in spring should be grown in a brisk moist heat, ought now to be rested, in a temperature of about 40 degs., such as that kept up in this house; and require to be kept dry.

Neapolitan Violets are liable to suffer from damp, and require much attention in the removal of decaying parts.

HEATH HOUSE.—*Temperature, &c.*—So that frost is kept out, and the plants get a good share of ventilation, little more is required. The plants will now be inactive and at rest, and the cooler they are kept, consistent with safety from actual frost, the better will it be for them, as they will not then be prematurely excited. The day temperature may range anywhere near 40 degrees, and at night may fall within a degree or two of freezing point without injury; indeed a few degrees of frost, if it happens to fall upon them, does not hurt them, but it is, perhaps, better to avoid this. They cannot bear confined and stagnant air, and therefore daily ventilation is of primary importance. Hardly any class of plants requires to be more carefully watered than the heaths and their allies, which is partly in consequence of the fineness and hair-like nature of their roots, and partly owing to the soil they are grown in being exceedingly difficult to wet, when once it has got dry; this, it will be seen, prevents the remedy from being effectually applied. Now, to avoid the injury which the plants sustain, often irreparable, by neglect of this operation, the greatest possible care should be taken to keep the soil in which every plant is growing in a medium and equally moistened state, especially preventing the soil at the bottom of the pots from getting dry while the top looks moist enough. The West Kent garden pot should be used, in order to admit of examination in this respect. It is best not to use cold water, but to make it just above

the temperature of the house. If the weather is damp and foggy, it may be proper sometimes to light a fire during the day, giving full air at the same time, in order to dry the interior.

Azaleas.—Take a plant or two in succession to the forcing house, to expand their flowers.

CAMELLIA HOUSE.—*Temperature, &c.*—This requires much the same management as the heath house, that is, a low temperature, free ventilation, and moderate regular application of water to the plants. Both in the case of these, and also heaths, fire heat may be dispensed with, except in very severe weather, if a covering can be put on the glass sufficient to exclude frost. Light frame-work shutters, covered with the asphalted felt, are as neat a contrivance as any for this purpose, and fully as effectual.

Camellias.—Successional plants from the forwarder batches should be removed to the forcing house, to bring them into flower for the conservatory; they must first be taken to the coolest part, and subsequently guarded against sudden changes of any kind. The plants in their ordinary state will be quite inactive now.

Rhododendrons, Daphnes, Oranges, and other plants kept here, may also be removed in succession to the forcing house to expand their flowers; the three here named are especial favourites for the conservatory.

PELARGONIUM HOUSE.—*Temperature, &c.*—Here a somewhat higher temperature, in conjunction with free ventilation, is required to be kept up, but it must not be carried too far. An average of 45 degs. in the day, and a minimum of 36 degs. at night will suit them. They should get fresh air more or less every day, but being in a gently growing state, they must be rather more guarded against much cold air, especially in the shape of a current. To effect this, the ventilators on the sheltered side only should be opened in rough weather. The plants will require to be regularly watered, but must not receive beyond a moderate supply. As a general rule, the atmosphere must be kept dry, and no water carelessly spilled about the house; but if it should happen that the frost should get inside the house, the plants may then be sprinkled. The management of frozen plants is a point of importance, for though they cannot but be injured by such a visitation as frost, yet it is generally practicable to thaw them, without the injury being very material. The plan is this: get the fire burning briskly, so as to raise the temperature to 32 degs.; at this juncture sprinkle the plants freely with *very cold* spring water, and continue this until the temperature is raised above freezing point, and the plants are thawed. No sun should be allowed to reach them for some time.

Pelargoniums.—The chief matters to be attended to are the stopping of the plants, to keep them dwarf and bushy, and the occasional renewal, and stirring up of the surface soil. Do not let them get crowded. The forcing plants should be removed in succession to the forcing house.

Calceolarias.—These require to be occasionally looked over, the forwardest shifted into larger pots if they seem to require more pot room, and the others should have the surface soil renewed. Keep them thin enough to prevent their being drawn up weakly.

Cinerarias.—Some of these may be shifted into larger pots, and other forwarder plants taken to the cool part of the forcing house, to accelerate their blooming.

Tropeolums, and similar climbing plants, should have their branches properly trained and regulated while young; if they have a large space to cover, it is better to lead them to the extreme parts first, and when these are filled, to fill up the lower parts. As they approach the limit of their growth, they must not be too strictly trained.

Fuchsias may remain in a nearly dry state in the back part of the house, or in almost any situation free from frost, until February, when they are to be brought out, and set growing.

Insects.—*Pelargoniums*, *Calceolarias*, and *Cinerarias*, are very liable to the attacks of green fly, and if these are not kept in check they soon do serious injury. Fumigation should therefore be resorted to as soon as any are observed; or, if the smell of tobacco is objected to, the plants may be syringed with diluted tobacco water. In either case, sprinkle them with clean water the following day.

THE PLANT STOVE.

The plants here also require to be at rest, and this change is to them more obvious than in those which require a less degree of heat, &c., at the growing season. Nothing exciting must be indulged in; the chief point being to preserve the growth already made, healthy and perfect till the next growing season.

Temperature, &c.—The temperature should not be allowed to rise above 60 degs. in the day time, and about 50 degs. at night will be high enough. The principle of a low night temperature, too often overlooked, should be especially acted on; it is one principal feature in successful cultivation. The admission of air must be guarded. A gentle fire being applied at night, and kept going during the early part of the day, enough air may be admitted to regulate the temperature to the point above indicated. It is desirable to admit a portion of air daily, but this is not to be carried so far as to expose the plants to any

considerable degree of cold; in fact, the temperature may be taken as the principal guide to ventilation, for this will secure results near enough for all practical purposes. A comparatively dry atmosphere must be maintained. Do not let the light be obstructed from the plants by dirty glass.

Watering.—None of the plants require more than moderate watering at this time of the year, and these chiefly of the shrubby kinds, and such few others as may happen to be slightly growing. All others, including the majority of bulbs, tubers, and succulents, require very little water, indeed, scarcely any.

Creepers.—Most of the creepers which bloom early may be pruned, and tied in, and will then require no more attention till the growing season.

ORCHIDACEOUS HOUSE.

The present being a rather inactive period as regards the growth of the plants, may present a good opportunity to make such additions to the collections as may be thought desirable. If the plants are secured now, there will be an opportunity of submitting them for a time to the general course of treatment which is adopted, and they will be ready to grow without interruption when the proper season comes round.

Temperature, &c.—About 60 degs. may be taken as the average day temperature, and 55 degs. the maximum night temperature. The hardier kinds grown in the cooler house may be placed in a dry greenhouse, where they will not get more than 45 degs., and this treatment will induce more vigorous subsequent growth. Very little air is requisite now; and few of the plants will require water directly applied to them for a week or two at a time, and then only just enough to moisten them. The atmosphere must be kept comparatively dry. If any moisture is allowed to remain in contact with the young growth of the plants, it is at this season almost sure to cause them to rot off.

Dendrobiums, which have previously been rested, will probably be showing flower, and in this case may receive some additional warmth with advantage.

Cattleyas and *Lælias*, will now be making new roots, and at that period require little or no water. It is therefore highly necessary in the potting of these, to employ such a kind of soil, and arrange it in such a manner, as will admit of the free passage of water.

Insects.—These pests should be carefully looked after and destroyed, or they will sadly disfigure the plants; woodlice, in particular, are exceedingly destructive. Mr. Lyons has invented a kind of stand, intended to place the plants beyond the reach of these marauders; it is called the *Oniscamytic epiphyte* stand,

and consists of a kind of saucer, in the centre of which the plant is elevated, being surrounded by a kind of fosse kept constantly filled with water.

FORCING HOUSE FOR FLOWERS.

Temperature, &c.—Still keep the heat as equable as possible, avoiding all sudden changes. Should a few fine days occur, raise the temperature by fire heat, so as to admit of giving air without lowering the heat of the house too sensibly. The range of the thermometer should be from 50 to 65 degrees.

Watering.—Be guided in this by the weather, withholding a great deal, especially of the syringing, in damp, cloudy weather, and see that all means of drainage in and about the house are efficient. At the same time be careful that the air in the house never becomes really dry, by being deprived of its moisture by over heat.

Roses.—Remove to cooler quarters any whose blooms are about to expand, and introduce a fresh supply. Keep them as near the glass as possible, and search constantly for insects, for they are liable to the attacks of many different kinds. If any of the Indian or Chinese sorts do not expand their flowers freely in the pit, a few days in the house will do them good.

Pelargoniums.—Be careful to remove those already in before they have advanced too far in bloom, or have become drawn. Bring in others to replace them, and watch them very narrowly, as they are one of the first plants the green fly attacks, and they soon spoil the points of the young shoots and trusses of flowers: fumigate immediately they are detected, and syringe well the next morning, if the weather permit.

Hyacinths.—Remove these to the conservatory as soon as the lower flowers begin to colour or to expand, and introduce fresh plants. If they have grown to any length under the ashes where buried, and are blanched, set them in a dark part of the house for a day or two, until they get a little colour, and then move them to where they will have plenty of light and air.

Tulips, &c.—Keep up the supply of these and other bulbs as well, by following a similar routine.

Lilacs, and other hardy shrubs, should be removed as they begin to bloom, and fresh supplies be brought in, and treated as previously directed.

Cerasus Malaleb.—A few trees of this should be kept well established in pots, and one or two now and then introduced to the house, for the sake of its powerful fragrance.

Double Cherry.—These also should be forced, for the pure white of their blossoms, and also for the abundance in which they are

produced. A few standards or half standards to place among the taller plants would have an excellent effect.

American Plants may be brought in in greater quantities this month, as their flowers will expand more perfectly as the light increases. Keep them moist and cool at the roots, and their heads well exposed to light and air.

Cacti.—Introduce a quantity of these towards the end of the month, and gradually bring them forward. An occasional watering with liquid manure will be beneficial to them, when they are in strong growth. Let them be carefully washed and cleaned before they are brought in, if there is any appearance of scale upon them.

Pinks.—Introduce more of these, and let them come on very slowly, being careful that they do not become dry, or they will suffer much. As a good many of these flowers are generally wanted for bouquets, a fresh batch should be placed in heat about every fortnight.

Violets may also be introduced, and be placed in the coolest part of the house. Keep them free from decaying leaves, and do not wet them too much over head, as they are impatient of moisture, and speedily rot if watered indiscriminately.

Lily of the Valley.—Bring in more, and give it much the same treatment as the last, although it will accommodate itself to a more shady place. Have some in boxes for cutting.

PITS AND FRAMES.

Half-hardy plants. The necessity of providing protection against frost will now be getting more urgent than heretofore. One great means of avoiding much of the injury which results from severe cold, consists in maintaining, as far as possible, a dry atmosphere in the interior, by the various means pointed out at p. 499; if a dry atmosphere is secured, the influence of what would be really too great a degree of cold, would be far less felt than if the dampness were more powerful. To exclude external cold, some covering material should be provided; the most common and effectual materials are found in ordinary garden mats, but in fact almost anything may be used. Thatched covers, formed of light frame-work thatched with reeds, straw, or fern, are sometimes used; but a much neater covering consists of framework covered with the asphalted felt, which is also an excellent means of protection. These covers are most effectual when so made as to fit on at two or three inches from the glass, and enclose the space beneath them; the confined air acting as a resister either to the outward radiation or transmission of warmth, or the inward progress of cold. Covers which exclude light should

be removed during the day, except in severe weather.

WINDOW GARDENING.

The interest of window gardening will now be chiefly dependent on the small evergreen and variegated shrubby plants, and the ferns and mosses which have been already referred to. The former will require merely to be placed near the light in the day time, and set in any convenient place out of the way of frost at night, and to be moderately supplied with water; the latter may be permanently stood near the window, unless in the case of exotic ferns, which may require removing beyond the influence of frost; and they will need no other attention, except what may be suggested by a desire to preserve cleanliness. Geraniums and similar plants must be watered just enough to keep them from drooping, set as much as possible in the light by day, and removed to where frost will not affect them at night. It is difficult to give fresh air in a satisfactory way to plants in windows; if the room is ventilated, they will mostly get enough, but if fresh air is admitted on their account, it should never subject them to a cold draught. It is best in mild weather to set the window quite open, having the openings on the other side of the room at the same time closed. Though it may be desirable to set the pots in feeders, as a matter of cleanliness, no water should ever be given or suffered to remain in them.

ROSE GARDEN.

The continuance of last month's management is the principal thing to care about. The procuring and planting of stocks, the formation of new rose-beds, or roseries, the planting of newly purchased trees and bushes, the removal of plants from one part of the ground to another, the taking up of tender ones and protecting them as mentioned, the potting-off of struck cuttings, the shifting of potted plants from one sized pot to another, as the sorts may require room, the removal of more potted roses for forcing into the greenhouse after pruning them as before directed, the filling of pots with cuttings to take their chance of striking during the winter, the sheltering of seedlings and bedded-out plants by means of litter, such as pease-haulm, or coarse straw, or fern-leaves, or any other dry open medium; all these things come over again, so far as many are concerned, and will not be found too late if they have not been done, even when once doing is enough. If many plants are wanted, all the clippings of the long branches which must come off in winter pruning should be put into the ground under hand-glasses, being first properly cut up to a joint, and shortened to two or three eyes; many

will be found struck when the growing time comes round. The stocks should be all trimmed of their side-shoots as they grow; but as the foliage all disappears, and we can see better for it, all the suckers should be grubbed up that have been overlooked; and lastly, the earlier directions should be carefully read, and all errors and omissions should be repaired forthwith.

THE FLOWER GARDEN.

Auriculas.—Keep the plants moderately dry; remove the decayed leaves; and give as much air as possible in mild weather. In severe weather cover up with mats. Have the frame occasionally well cleared out.

Beds and borders.—Those which are occupied by summer flowers, and which are now probably filled with various kinds of bulbs, will look more cheerful, if filled with various kinds of small evergreens in pots, plunged between the bulbs, than if left quite bare and naked. Where they are within sight of the windows, therefore, this is worth attending to.

Bulbs.—All the more tender kinds will require protection by means of a covering of soil, or of litter or mats, &c., especially the choicer sorts.

Carnations.—Very little, if any, water will now be required; give only enough to prevent drooping; let the plants have as much air as possible whenever the weather will permit. Take an opportunity sometimes of having the frame made thoroughly clear of all decaying matter. Picotees require the same kind of treatment.

Composts of all kinds may be collected, and should receive attention in turning over in frosty weather, so as to get well aerated before they are required for use in the spring.

Lawns.—The whole of the grass should be poled and also rolled and swept frequently, so that it may be kept in the best possible order, which is not the case when these things are much neglected.

Pansies.—For those in the borders the chief care is to bestow slight shelter in bad weather, by sticking a few evergreen boughs among the plants, or loosely covering them with litter. The potted plants in frames simply require to be very carefully and very moderately supplied with water, just enough to prevent their drooping, and to have free air when the weather is mild.

Pinks.—The plants should be examined occasionally, to see if they are loosened by frost, and when the soil is dry, let it be pressed close about them. The plants may be protected a little by pieces of evergreen boughs stuck over the bed, or by laying on a loose covering of long litter.

Shrubs and trees may be planted during intervals of mild, dry weather.

Walks.—The frequent rolling and sweeping of these, so as to have them always orderly and in perfect keeping, should never be lost sight of even among the beauties of summer, much less when these have passed away.

THE KITCHEN GARDEN.

Look over the whole of the crops, with the view of ascertaining that nothing is likely to suffer from the frost. Strict attention is requisite to comply with the oft repeated, yet oft neglected, injunction, that every thing and place should be clean and tidily kept. Attend to the clipping of hedges.

Asparagus.—This is a good time to make new asparagus beds. Let the ground be well trenched, and add manure unsparingly.

Beans.—Draw the earth up about the plants as they appear above the surface; this affords excellent protection.

Cauliflower.—Give plenty of air to those under glasses, and shift those in four-inch pots to a size larger.

Celery.—Protect the ridges from frost, which, when severe, will cause the plants to rot; thatched hurdles will answer the purpose.

Endive.—Lift these with balls, and transplant into frames for blanching; give all the air possible.

Lettuces.—The plants will be benefited by a slight stirring of the soil. Keep off the lights in mild weather, but during the day only.

Peas.—Earth up those which are above ground; also stake them, as this affords shelter. Extra covering must be given in very severe weather.

Potatoes.—Neglect not to look over the stock, however small, and pick out all those which are rotting or rotten. An attempt may be made successfully to preserve the fresh parings amongst dryish materials, which, in the spring, will be sure to be valuable for planting.

Spinach.—Run the hoe slightly through it if the weather is mild; and when gathered, observe to pick only the under leaves, without destroying or touching those in the centre. Considerable damage is often done from inattention to this simple rule. The same may be said of Parsley.

CUCUMBER FRAMES.

The chief attention required in forcing cucumbers during the month, is the keeping up a regular temperature, suitable to their constitution, preventing the accumulation of moisture or dampness, removing decaying leaves, or sometimes a healthy one where they are crowded, and regulating the number and extension of the branches, by following

up the rule of stopping beyond every leaf or fruit. When any of the branches wear out or fail, remove them, and train a young vine in the place. The temperature may average 70 degrees by day, and 65 degrees at night, varying five, or even ten degrees, during intervals of extremes in the weather. While neither the soil nor the atmosphere must be kept dry, yet they should be comparatively so; perhaps no water need be applied, or if any, very little, and that little in a tepid state. Admit a little air if possible every day. The linings of hot dung must not be neglected. Have them turned up and removed occasionally before the heat declines, but do one side of the bed only at a time.

FRUIT GARDEN.

Attend to the pruning of young trees and bushes; and bear in mind that it is the development of a handsome, as well as ultimately a prolific tree, that must now be borne in mind; it will generally be found that to cut the young shoots back to three or four eyes the first year will suit every purpose, and practice will teach the rest. In pruning established trees, cut the wood shoots to an inch in length where spurs are wanted; and where there are plenty of fruit-spurs, cut those which only produce wood close in. The fruit-buds are known by their plump and round appearance, the leaf, or wood-buds, being thin and narrow in proportion.

NEW PLANTS AND SHRUBS,

INTRODUCED OR MADE KNOWN DURING 1846.

ABELIA RUPESTRIS, *Lindley*, (rock *Abelia*.) *Caprifoliaceæ* § *Lonicerææ*.—A small spreading half-hardy, or green-house bush, with slender branches, opposite ovate leaves, and pure white flowers, something like those of the honeysuckle, in pairs from the axils of the leaves on the short lateral branches. It is sweet-scented, and remains a considerable time in flower. "Should it prove hardy, it will doubtless be a good addition to the shrubbery, in consequence of its flowering in autumn." It was found by Mr. Fortune amongst rocks on the Chamoo Hills, in China, and was introduced in 1844.

ABUTILON RUFINERVE, *A. de St. Hilaire*, (rusty-nerved *Abutilon*.)—*Malvacææ* § *Sidæææ*.—A half-shrubby green-house plant, of free growth, with stalked heart-shaped pointed leaves, and erect straw-coloured flowers, growing in twos and threes at the end of the branches. It blooms in summer, but is not showy enough for green-house culture. It was sent to England by Dr. Lippold, from the Rio Doce, and presented to the Horticultural

Society by Sir P. de M. G. Egerton, Bart. in 1844.

ACANTHOPHIPPIUM JAVANICUM, *Blume*, (Javanese *Acanthophippium*.)—Orchidaceæ § Vandeæ-Cryptochilidæ.—A handsome dwarf pseudo-bulbous epiphyte, with short, broad, plaited leaves, and bearing a bunch of flowers below the leaves, proceeding from the base of the bulbs; the flowers are of a singular pouch-shaped figure, and are yellowish, with purple streaks on the outside, and of a delicate lilac at the orifice. It was found on the higher parts of Mount Salak, in Java, and was bloomed by Messrs. Loddiges, in 1844.

ACHIMENES GRANDIFLORA, *var. Liebmanni*.—Gesneraceæ § Gesnerææ.—This variety differs chiefly from *grandiflora* in having rather more vivid rose-purple flowers, without the whitish blotch at the throat, in being more slender, and having narrower leaves. It is, in fact, a smaller and deeper-coloured variety of *A. grandiflora*. It appears to have originated on the Continent.

ACHIMENES PATENS, *Bentham*, (spreading-flowered *Achimenes*.)—A handsome herbaceous stove plant, with scaly tuberous roots, and something the appearance of *A. grandiflora*, but instead of the leaves being rough, as in that species, they are nearly smooth: the flowers are nearly two inches across, and of a peculiar rich deep bright purple colour. It exactly resembles the other *Achimenes*, now so common, in habit and culture. It was sent to the Horticultural Society by Mr. Hartweg, from Mexico, in 1846.

ADAMIA VERSICOLOR, *Fortune*, (various-coloured *Adamia*.)—Hydrangeaceæ.—A fine green house bush, with oblong lanceolate leaves, having much the appearance of those of *Hydrangea japonica*. The flowers grow in a pyramidal panicle, nearly a foot in diameter, violet blue when expanded, but white when in bud; they are nearly an inch in diameter, of seven (or six) petals forming a pointed star. In a wild state, the flowers are succeeded by fine blue berries. It was introduced to the garden of the Horticultural Society in July, 1844, by Mr. Fortune, from China, where it grows in ravines half way up the mountains, on the island of Hong Kong. This will be a very ornamental plant.

ADENIUM HONGHEL, *Alph. De Candolle*, (the Honghel bush.)—Apocynaceæ § Wrighteæ.—A dry-stove shrub, with one or two fleshy stems like those of a *Plumieria*, growing from a club-footed base; these stems divide sparingly into a few dumpy branches, each bearing only two or three ovate oblong leaves, and several very handsome rose-coloured flowers of five ovate segments, on a cylindrical greenish tube. It is of exceedingly slow growth, and requires but little water. Introduced from Aden to

the garden of the Horticultural Society about 1845, by the East India Company, where it bloomed in June 1846. It appears to be widely dispersed through Africa and the neighbouring part of Asia.

ADENOCALYMNA COMOSUM, *De Candolle*, (hop-flowered *Adenocalymna*.)—Bignoniaceæ.—A handsome stove shrubby climbing plant, with rough dotted stems, and opposite trifoliate leaves, with ovate leaflets. The flowers are borne in racemes, both terminal and axillary, which are densely clothed with large bracts, which makes them look like the aments (or catkins) of the hop; the bracts fall off before the flowers open; the latter are trumpet-shaped, two-lipped, with a wide-spreading limb, divided into five large rounded lobes; they are large, handsome, and bright yellow-coloured. It blooms in the autumn, and was sent, in 1841, from Rio, to the garden at Kew. It is also called *Bignonia comosa*.

ÆSCHYNANTHUS BOSCHIANUS, *De Vriese*, (Bosch's Blushwort.)—Gesneraceæ § Cyrtandreaæ.—A very beautiful epiphytal stove evergreen shrub, with slender trailing stems, rooting at the joints, small ovate opposite fleshy leaves, an inch and a half in length, and axillary clusters of blossoms; these are deep scarlet, downy, three inches long, tubular and curved, very wide at the orifice, and divided into five lobes, yellowish at the throat, and streaked with reddish purple. It blooms very freely under good management during the spring and summer months. Introduced from the Continent in 1844; native of the Island of Java, where it grows as an epiphyte. Both this and the following species grow well in the orchid house, and have a pretty appearance when allowed to hang down from a suspended pot, basket, or block.

ÆSCHYNANTHUS HORSFIELDII, *Brown*, (Horsfield's Blushwort.)—A handsome evergreen glabrous stove shrub, of erect habit, and medium strength, with opposite ovate lanceolate pointed leaves, and light scarlet flowers, two inches long, with a deeply divided calyx, borne very freely along the branches from the axils of the leaves in pairs, or more numerous. It is a native of Java, blooms through the summer, and was introduced in 1843.

ÆSCHYNANTHUS LOBBIANUS, *Hooker*, (Mr. Lobb's Blushwort.)—A very handsome evergreen shrubby stove plant, with trailing and rooting purple stems, furnished with opposite elliptic or ovate lance-shaped pointed fleshy leaves, upwards of two inches long, and tinged with purple; it has fine large deep scarlet downy flowers, two inches and a half long, set in large inflated tubular chocolate or lurid-coloured calices; they grow in corymbs near the points of the shoots, and sometimes several together in the axils of the leaves, and are very

freely produced on the plants. It blooms from June to August. Introduced in 1845 by Messrs. Veitch, of Exeter, from Java.

ÆSCHYNANTHUS PULCHRA, *Steudel*, (beautiful Blushwort.)—A shrubby evergreen stove plant, with trailing branches, and oval-lanceolate pointed fleshy leaves, upwards of two inches long, and large deep scarlet curved flowers, growing in bunches both from the axils of the leaves and at the ends of the branches; the flowers are three inches in length, and produced in summer. It was introduced from Java in 1845, by Messrs. Veitch, of Exeter. This plant is also called *Trichosporum pulchrum*.

ÆSCHYNANTHUS PURPURASCENS, *Hasse*, (purplish-green Blushwort.)—This is a straggling stove shrub, with opposite oblong lance-shaped fleshy leaves, and axillary clusters of small yellowish-green flowers, enclosed by a dark purple calyx, divided into long narrow segments. It blooms freely in the spring, but is not showy. It was introduced from Java in 1844 by Messrs. Veitch. It has borne many names among botanists, such as the following:—*Æschynanthus albida*, *Bignonia albida*, *Trichosporum albidum*, *Lysionotus albidus*, none of which, neither the specific name it now bears, are very applicable to the plant.

ÆSCHYNANTHUS MINIATUS, *Lindley*, (vermillion Blushwort.)—A shrubby evergreen stove plant with trailing branches, producing roots at intervals, and furnished with small ovate or elliptic-lanceolate, acute, fleshy leaves, from the axils of which arise clusters of flowers, which are scarlet and hairy, nearly three inches long, and growing out of inflated green calices. It blooms in the summer. Native of Sumatra and Java, from which latter country it was received by Messrs. Veitch, of Exeter, in 1845. It is also called *Trichosporum radicans*.

ALLOPECTUS REPENS, *Hooker*, (creeping *Allopectus*.)—*Gesneraceæ* § *Gesnerææ*.—This is a pretty slender stove plant, with trailing stems, which throw out roots from between the pairs of leaves. In a wild state it is probably scandent on the trunks of trees, and rooting among dead bark and moss. The leaves grow opposite, and are small, ovate, and fleshy; and the flowers are produced in February from the axils, and consist of a large spreading purple-blotched calyx, and pretty curved gesnera-like flowers, of a yellow colour, tinged with red. It was sent in 1844 by Mr. Purdie, to Kew, from the damp woods of the Sierra Nevada, Santa Martha.

ANEMONE JAPONICA, *Siebold*, (Japanese Windflower.)—*Ranunculaceæ* § *Anemoneæ*.—A fine herbaceous perennial plant, introduced from Shanghai, in the north of China, by Mr. Fortune, to the garden of the Horticultural Society. It grows two feet high, with large

three-lobed leaves, and in the autumn months bears large purplish-red semi-double flowers of much beauty, and which last a long time in bloom. It is supposed to be nearly or quite hardy. Introduced in 1844. It grows on the margin of the mountain streams in some parts of Japan. Suitable for blooming in the autumn in flower beds.

ANGULOA RUCKERI, *Lindley*, (Mr. Rucker's *Anguloa*.)—*Orchidaceæ* § *Vandæ-Maxillariæ*.—A handsome species of this rare and singular family. It is pseudo-bulbous, with broadish plaited leaves, and yellow sub-globular flowers, spotted inside with crimson, and having a crimson lip. These grow singly on stalks which issue from the base of the pseudo bulbs. It is a Columbia plant, but its locality is unknown. Introduced in 1845 to S. Rucker, Esq. of Wandsworth, by Mr. Linden. It is the third known species of this genus, all having been introduced within this year or two.

ARIOPSIS PELTATA, *J. Graham*, (peltate *Ariopsis*.)—*Aracææ* § *Caladieæ*.—A curious little stove plant, with tuber-like root-stocks, from which spring up the delicate peltate leaves; the scapes rise from the base of the petioles of these leaves, and reach about half their length, bearing a slightly drooping, boat-shaped purple-brown spathe, enclosing the spadix. It is quite an insignificant plant. It is from Bombay, whence it was introduced in 1844: it flowers in August. Also called *Remusatia vivipara*.

ARISTOLOCHIA GIGANTEA, *Martius*, (gigantic-flowered Birthwort.)—*Aristolochiaceæ*.—A very remarkable and ornamental stove climber, of vigorous habit. The leaves are acutely heart shaped; the flowers are axillary and pendent, nine or ten inches long; the flower stalk is terminated by a large club-shaped ovary, and from this proceeds the tube, which is cream-white, tinged with green, the lower (pendent) half oblong and inflated; thence it becomes contracted, bent like a syphon, and then enlarges and becomes excessively inflated on one side; again it becomes contracted, and at once expands into the ample, almost conchiform limb, which is cream-coloured, mottled with purple on the outside, and nearly white, reticulated with purple veins in the inside; the apex is tipped with a short tail, nearly an inch long. This singular plant does not produce flowers so large as those of a similar one, the *A. gigas*, but they are devoid of the horrid stench which that kind possesses. It is a native of Brazil, and flowers in April.

ARTEMISIA LACTIFLORA, *Wallich*, (milk-flowered Wormwood.)—*Compositæ* § *Artemisiææ*.—A herbaceous hardy species, with purple stems, growing two feet high, and flowering in autumn, but of no beauty. It is a native of China.

ASTER CABULICUS, *Lindley*, (Cabul Star-

wort.)—*Compositæ* § *Asteroidæ*.—A hardy shrubby Aster, with whitish willow-like or lanceolate leaves, and paniculated corymbs of small bluish-lilac daisy-like flowers; not very showy, but very numerous produced during August and September. It grows about a yard high, and is an interesting addition for the front parts of shrubbery borders. It is a native of the north of India, and was raised in 1842 from seeds distributed by the Hon. East India Company.

ASYSTASIA COROMANDELIANA, *Nees*, (*Coromandel Asystasia*.)—*Acanthaceæ* § *Ruellidæ*.—A somewhat shrubby stove plant, with zig-zag branches, opposite ovate-cordate leaves, and short axillary racemes, bearing from six to ten flowers. The latter are funnel-shaped, with a long tube, which is green, sprinkled with purple dots, and a deep lilac limb two inches across. It is an autumnal flowering plant. Messrs. Henderson appear to have introduced it, probably in 1845. It is a native of India. It bears also the following names:—*Ruellia obliqua*, *R. secunda*, var., *R. intrusa*, *R. coromandeliana*, and *Justicia Gangelica*.

ATROPA ACUMINATA, *Royle*, (pointed-leaved Deadly Nightshade.)—*Solanaceæ* § *Curvembryæ*.—A hardy perennial, growing four feet high, and much like the *Atropa Belladonna*, but with firmer and narrower leaves, very much tapered to the point. The flowers are dull pale yellow, produced in June and July. The berries are quite like those of the common kind. Native of Chinese Tartary, at an elevation of 12,000 feet. Introduced in 1845.

AZALEA INDICA, var. *Conqueror*. *Ericaceæ* § *Rhododendrea*.—A large pale red-flowered variety, of good form, raised by Mr. Barnes of Bromley.

AZALEA INDICA, var. *Gledstanesii formosa*.—A slight variation from *A. Gledstanesii*, which is one of the best kinds in cultivation, and is white, with a few streaks of red. It was raised by Mr. Pawley of Bromley.

AZALEA INDICA, var. *alba magniflora*.—A seedling raised by Mr. J. Green, of Cheam. It has large white flowers, singularly and delicately marked with a few streaks of rosy purple. Though a useful variety, it has not much permanent merit, being very much inferior in form to some other Indian azaleas, such as *lateritia*, *variegata*, &c.

AZALEA INDICA, var. *violacea elegans*.—This was also raised by Mr. Green, and is inferior in point of form to the preceding. It is of a pretty clear lively purple or violet colour, which constitutes its chief merit.

AZALEA OBTUSA, *Lindley*, (blunt-leaved Azalea.)—A very handsome greenhouse shrub, of compact habit, with evergreen oblong obtuse hairy leaves, and numerous flowers of a rich

glowing red, scented like the sweet-briar, and produced in spring. It was introduced from Shanghai in China in 1846, by Mr. Fortune, to the Horticultural Society. It is probably half-hardy.

AZALEA OVATA, *Lindley*, (ovate-leaved Azalea.)—This is a beautiful shrub, differing from all the other Chinese azaleas; for instead of having pale green hairy leaves, these are hairless and dark green. They are abruptly ovate, or in some cases almost heart-shaped. Mr. Fortune, who sent it from China in 1844, found two varieties in Chusan, "one with white, the other with pink or lilac flowers, both spotted and very beautiful." In the Chinese drawings sent by Mr. Fortune, the flowers are represented of the form and size of the *Rhododendron davuricum*, growing in clusters at the end of the branches. Its hardiness is not determined, but seedling plants stood the frosts of last autumn without injury.

AZALEA SQUAMATA, *Lindley*, (scaly Azalea.)—This is a handsome green-house shrub, with oval leaves, hairy when young, but smooth when old. In its natural state it blooms without leaves, producing at the end of every little shoot one or two large flowers of a clear rose colour, distinctly spotted with crimson on one side, and guarded at the base by a large sheath of bright brown scales. Mr. Fortune sent it from the mountains of Hong Kong. It has been long known, from dried specimens and Chinese drawings, but was not introduced until 1845.

BALSAMINA LATIFOLIA, *De Candolle*, (broad-leaved Balsam.)—*Balsaminaceæ*.—A handsome annual plant from the East Indies, cultivated in 1818, but apparently lost till reintroduced by Messrs. Veitch of Exeter, in 1845. It grows from one to two feet high, slightly branching, with opposite (sometimes whorled) ovate leaves, and large pale red, flat expanded flowers, with a deeper coloured eye, and a very long spur; they grow singly from the axils of the leaves. It will require to be cultivated in a cool stove or warm greenhouse.

BERBERIS FORTUNI, *Lindley*, (Mr. Fortune's Berberry.)—*Berberidaceæ* § *Berberidæ*.—A very striking evergreen shrub, supposed to be hardy, having pinnated leaves, of three or four pairs of leaflets and an odd one; the leaflets are about four inches long, and narrowly lanceolate, which gives it a very distinct appearance; the flowers are small and yellow, and grow in short terminal paniced racemes, and also from the sides of the old stems. Mr. Fortune found it in gardens in the north of China, and sent it to the Horticultural Society, in 1846. He does not appear to have met with it in a wild state.

BOUYARDIA LONGIFLORA, *Humboldt*, *B.*

et K. (long-flowered *Bouvardia*.)—Cinchonaceæ § Cinchonidæ.—A most desirable stove plant, of shrubby habit, with ovate acuminate leaves, and terminal branched corymbs of large pure white flowers, which exhale a most delicious jasmine-like fragrance; the flowers are salver-shaped, with a long slender tube, slightly swollen at the end, and terminated by a limb of four ovate lanceolate spreading segments. It is at present very rare, being only in the garden of the Earl of Derby, who received it from Itzabal, in 1845 (?). It is also found at Santa Anista, Queretaro, Huanajuato, and Guatemala. Also called *Aginetia longiflora*.

BRASAVOLA DIGBYANA, *Lindley*, (Mr. Digby's *Brasavola*.)—Orchidaceæ § Epidendraceæ-Læliadæ.—A stove epiphyte with short club-like stems or pseudo-bulbs, and flat oval fleshy leaves of a glaucous colour; the flowers are very large, yellowish white, and very sweet scented; the sepals oblong lance-shaped, and the lip very large, somewhat heart-shaped, and bordered by a deep fringe, which gives the flower a shaggy appearance. It was introduced from Honduras in 1845 (?) by Mrs. McDonald, and bloomed by E. St. Vincent Digby, Esq., at Minterne, in July, 1846.

BUXUS SEMPERVIRENS, *var. latifolia*.—Euphorbiaceæ § Buxæ.—A very handsome variety of the common evergreen box, with very broad and roundish dark green shining foliage. It will form a very desirable hardy evergreen shrub.

CALYSTEGIA PUBESCENS, *Lindley*, (downy *Calystegia*.)—Convolvulaceæ § Convolvulæ.—A double-flowered *Convolvulus* is at least a novelty. This plant is related to the larger bindweeds of our hedges (*C. sepium*); the leaves are of the same hastate figure, but smaller; the flowers are double, delicate pink, about as large as those of a double anemone, but arranged with the regularity of the rose. It was sent to this country from China, by Mr. Fortune, in 1844. It is probably hardy, if planted in a dry situation, and flowers freely in July and August.

CAMELLIA JAPONICA, *var. Beauté Parfait*.—Ternströmiaceæ.—This is a pretty variety, raised by Mr. Hally of Blackheath. The flowers are somewhat small, but they are well formed, with handsome cupped petals, of a deep rose-pink colour.

CAMELLIA JAPONICA, *var. Beauté Suprême*.—This is a very handsome variety, in the possession of Messrs. Lane and Son, of Berkhamstead. The flowers are large, finely formed, full of even closely-imbricated reflexed petals, and of a deep rose-pink, or delicate pale rose colour.

CAMPANULA NOBILIS, *Lindley*, (noble

Beilwort.)—Campanulaceæ § Campanulæ.—A fine herbaceous perennial, believed to be hardy, but not yet tested. It produces a tuft of rather large heart-shaped leaves, from among which the flower stem arises to the height of a foot and a half, or more, bearing several large drooping, bell-shaped, pale purple flowers, which in the inside are abundantly sprinkled with bright purple dots. It flowers in May, and is allied closely to the Canterbury-bell (*C. medium*). Introduced by Mr. Fortune from Chusan and Shanghai, to the garden of the Horticultural Society, in 1844.

CASTILLEJA LITHOSPERMOIDES, *Humboldt, B. et K.* (lithospermum-like *Castilleja*.)—Scrophulariaceæ § Euphrasieæ.—A handsome half-hardy herbaceous perennial, growing from one foot to a foot and a half high, with lance-shaped linear entire leaves, and greenish white flowers, growing in a dense spike at the end of the shoots, and nearly hidden by large conspicuous bracts, the upper half of which is of a bright scarlet colour. It flowers throughout the summer when planted in the open border. The beauty of the plant consists in the bright scarlet colour of the bracts which accompany the blossoms. It is a native of New Spain, near Real del Monte and Moran, and at Quito, at a considerable elevation above the sea, and has also been raised from seeds received from Texas in 1845, by Mr. Cattell, nurseryman of Westerham. The genus is reputed to be difficult of culture, succeeding best in peat soil, and requiring the protection of a frame in winter.

CATTLEYA LEMONIANA, *Lindley*, (Sir C. Lemon's *Cattleya*.)—Orchidaceæ § Epidendraceæ-Læliadæ.—A very ornamental stove epiphyte, with short pseudo-bulbs, each producing a thick obtuse oblong-lanceolate leaf from the top, accompanied by the scape, usually two-flowered; the flowers are large, of a pale rosy lilac, the lip rolled up in a convolute manner, and pale yellow in the interior. It was imported in 1842 from Brazil, by Sir C. Lemon, Bart., in whose garden, at Carelew, it flowered for the first time, in 1845.

CEREUS SPECIOSISSIMUS, *var. Allnuttii*, *Cactaceæ* § *Cereidæ*.—This is a seedling, raised between *C. speciosissimus*, and *C. grandiflorus* (the night-blooming *Cereus*): it has in some measure the habit of both these, and its flowers, which appear to be of short duration, or do not open well in the day time, are of an orange-scarlet tint. It was raised by J. Allnutt, Esq. of Clapham, in 1845 (?).

CEREUS FLAGELLIFORMIS, *var. rosea pendula*.—A handsome hybrid cactus, with long triangular trailing stems, like the creeping *Cereus*, (*C. flagelliformis*), and having rosy-pink flowers, much larger than those of that kind: it was raised in 1845 (?) by Mr. Errington,

gardener to Sir P. Egerton, Bart. of Oulton Park, Cheshire.

CLEMATIS GRAVEOLENS, *Lindley*, (heavy scented Virgin's bower.)—Ranunculaceæ & Clematideæ.—A slender-growing hardy climbing plant, quite smooth, with twice or thrice ternate leaves, bearing small three-lobed leaflets on long straggling foot-stalks. The flowers are solitary, at or near the end of the branches, cream-coloured or pale yellow, rather pretty, consisting of four oblong-obtuse recurved sepals; they have a heavy scent, which is more disagreeable than pleasant. It was collected by Capt. Wm. Munro, in Chinese Tartary, at the Snowy Passes, at an elevation of 12,000 feet, in October, 1844, and flowered in the garden of the Horticultural Society in 1846.

CLEMATIS HEXASEPALA, *De Candolle*, (six-petaled Virgin's bower.)—This is a slender twining plant, requiring only the protection of a cool green-house. The leaves are opposite, slender, and composed of three leaflets (sometimes they are biternary, that is, the leaflets themselves are composed of three pieces): from the axils of these leaves, the flowers are freely produced in clusters of three and four; they are small and pale green, consisting of six segments or sepals, and are very sweet scented, which property, and the profusion in which they are produced in the month of April, are its chief recommendations. It is a native of New Zealand, and was reared in the garden of the Horticultural Society in 1844, from seeds presented by J. R. Gowen, Esq. It is sometimes called *C. hexapetala*.

CLEMATIS SMILACIFOLIA, *Wallich*, (smilax-leaved Virgin's bower.)—A shrubby climbing plant, of strong growth, with very large cordate-ovate pointed leaves, which have glandular teeth; it has panicles, axillary or terminal, of singular flowers, the sepals of which are reflexed, downy, and rusty on the outer side, black-purple and smooth on the inner surface; a bunch of white filaments occupies the centre of the flowers; they are very sweet. The plants bloom in June and July. It is a native of mountains in Java, and also of Nepal, and requires a green-house. It however grows freely out-doors in summer, and may prove nearly hardy. Introduced in 1845, by Messrs. Veitch, of Exeter, from Java. It is also called *C. glandulosa*.

CLERODENDRON SINUATUM, *Hooker*, (sinuate-leaved Clerodendron.)—Verbenaceæ.—A fine stove shrub of dwarf habit, with opposite ovate, or ovate-oblong downy leaves, and solitary many-flowered corymbs of flowers, which are collected into large roundish heads at the end of almost every branch; the flowers are pure white, salver-shaped, and highly fragrant. It blooms in the summer, and was

received by Messrs. Lucombe, Pince, and Co. of Exeter, from Sierra Leone, where it was discovered by Mr. Whitfield. Introduced about 1844, and bloomed in 1846.

COLLANIA ANDIMARCANA, *Herbert*, (Andimarcan Collania.)—Amaryllidaceæ & Alströmeriaceæ.—A tall growing straggling (or climbing) half-hardy perennial, nearly related to the Alströmerias and Bomarias. It has rather long lanceolate leaves of a glaucous hue, and twisted at the footstalk, and the apex of the stem is deflexed, bearing a drooping umbel of racemes of cylinder-shaped flowers, two inches long, which consist of six straight segments, the outer three orange-red tipped with dark-green, the others yellow tipped with green. It was introduced from Peru by Messrs. Veitch, in 1845; and is also found on the lofty mountains of Andimarcia. It blooms in the summer months.

COMBRETUM PINCIANUM, *Hooker*, (Mr. Pince's Combretum.)—Combretaceæ & Combretææ.—A stove shrub, with some tendency towards a climbing habit, but in its native country forming a dense bush of about six feet high, loaded with blossoms. It has large obovate oblong leaves, a foot long. No flowers have yet been produced in this country, but the panicles of flowers in the wild specimens measure a foot and a half, clothing the copious terminal branches with innumerable red, or purplish-red blossoms, with long red stamens and styles. It was introduced in 1845 (?) by Mr. Whitfield from Sierra Leone, and is cultivated in the Exeter nursery, by Messrs. Lucombe, Pince, & Co.

CRYPTOMERIA JAPONICA, *D. Don*, (Japan Cedar.)—Pinaceæ (Coniferæ) & Cupresseæ.—A very beautiful hardy evergreen tree. In Japan it grows from sixty to a hundred feet in height, and four or five feet in diameter, with a pyramidal shaped head, and rather erect or horizontal branches. In a young state it resembles Araucaria Cunninghami, but the latter has vertical branches placed at regular distances, while Cryptomeria has alternate spiral branches. The leaves are oval-shaped, incurved, and arranged in a spiral manner. The plant grows abundantly about Shanghai, and in other places in the north of China, and there is little doubt that it will prove hardy in England. Mr. Fortune sent seeds from Shanghai in 1844, from which the first living plants that have been seen in this country were raised.

CUPHEA CORDATA, *Ruiz and Pavon*, (large red-flowered Cuphea.)—Lythraceæ & Lythreæ.—A very handsome sub-shrubby plant, with herbaceous downy erect stems. The leaves are opposite, ovate, the lower ones rarely subcordate-ovate; the largest are two inches long, gradually becoming smaller, and passing insensibly into bractæ as they approach the

flowers: the flowers are in terminal panicles formed of lax racemes, each bearing two to four drooping (large, for this genus) bright red, or scarlet flowers, consisting of a tubular, coloured calyx, and six petals, the four lower ones very small, the two upper ones very large and expanding like wings. Introduced by Messrs. Veitch, of Exeter, from hills and woods in Peru, about Huassahuassi, Chaclla, Acomayo and Huanuco. It flowers in August. Introduced in 1844.

CUPHEA PLATYCENTRA, *Bentham*, (broad-spurred Cuphea.)—A very neat and desirable half-hardy suffruticose plant, suitable for "bedding out" in summer. It has opposite elliptic pointed leaves, narrowed to the base, and bears very numerous bright scarlet tubular flowers, having a short rounded spur at the base. In a dry warm situation out of doors it is very showy. It was introduced from Mexico in 1846, by Joseph Anderson, Esq. of the Holme, Regent's Park, who obtained it from among some Mexican orchids purchased of Mr. Skinner.

CUPHEA MINIATA, *of gardens*, (vermilion-coloured Cuphea.)—A very showy sub-shrubby plant, requiring to be grown in a warm greenhouse. It is an erect plant, of free growth, with opposite ovate-lanceolate hairy leaves, and tubular flowers, deep purple at the mouth, covered with whitish hairs, and having two large brilliant crimson petals, expanded like mill-sails at the end of the tube on the upper side.

CYCLAMEN LITTORALE, *Sadler*, (shore Cyclamen.)—*Primulacæ* § *Primulidæ*.—A pretty little hardy perennial with small spherical roots, entire, subrotund, heart-shaped, spotted leaves, and pretty rose-coloured flowers; it grows only three or four inches high, and blooms in the spring. Roots were brought from the Lake of Como by Mr. Bentham in 1843 (?) and presented to the Horticultural Society. The nomenclature of *Cyclamens* is in a very confused state, but this plant appears to have been included by some botanists as a variety of *C. europæum*.

CYNOCHES EGERTONIANUM, *var. viride*, (green Egertonian Swan-neck.)—*Orchidacæ* § *Vandæ-Catascidæ*.—The so-called species of *Cynoches* are several of them known to masquerade, and assume each other's forms. The long-spiked, small purple-flowered *C. Egertonianum*, for instance, sometimes blooms as the short-spiked, large green-flowered *C. ventricosum*, and the same thing occurs in others. *C. Egertonianum viride* is a pale green-flowered variety of that species, and is not remarkable for beauty. It was imported from Oaxaca by Messrs. Loddiges in 1843, and in their catalogue is called *C. stelliferum*.

CYPRIPEDIUM IRAPEANUM, *Llave and Lex-*

arza, (Irapean Lady's slipper, or Pelican flower.)—*Orchidacæ* § *Cypripedææ*.—A green-house perennial, or terrestrial orchid, with short upright hairy stems, ovate pointed hairy leaves, and very large yellow flowers at the top of the stem: these grow two or more on the stem, according to the strength of the plant. The flowers are beautiful, with oblong sepals, and petals more or less hairy, the lip forming a large obovate pouch, at the mouth of which are a few crimson blotches. It is a native of Mexico, and is named from being found near the town of Irapeo. It blooms in the summer months. Introduced in 1846.

DAPHNE FORTUNEI, *Lindley*. (Mr. Fortune's Daphne.)—*Thymelacææ*.—This is a very beautiful green-house, or half-hardy bush; it has thin deciduous opposite ovate-oblong leaves, covered with very soft fine hairs. The flowers are arranged in clusters of four, upon branches scarcely beginning to put forth their leaves; they are bluish-lilac, rather more than an inch long, divided at the end into four roundish oblong lobes. It was sent, in 1844, by Mr. Fortune, from China, where it is met with on the Chusan hills, at Ningpo and Shanghai. Besides being a handsome greenhouse shrub, the plant seems well adapted for forcing. It first bloomed in January, 1846.

DATURA CORNIGERA, *Hooker*, (horn-bearing Datura.)—*Solanacææ* § *Curvembryææ*.—A showy shrubby species of *Datura*, allied to *D. arborea*, and known in gardens as *Brugmansia Knightii*,* and *Datura frutescens*. It is a strong growing plant, with large ovate leaves, and bears long, drooping, funnel-shaped, creamy-white flowers, during the summer and autumn. The mouth of the corolla is divided into five lobes, each of which terminates in a long, spreading, or recurved point. It requires a cool green-house, and in summer succeeds well in the open air. Its native country and time of introduction do not appear to be well known.

DATURA GARDNERI, *Hooker*, (Mr. Gardner's Datura.)—This is one of the plants called *Datura arborea* in our gardens, but which is not the plant so named by Linnæus. It is a shrubby plant, with ample leaves and drooping funnel-formed white flowers, borne profusely in summer and autumn. It grows well in a green-house, or in the open air in summer. It is found on the banks of streams on the Organ Mountains in Brazil, and was long since introduced.

DAVIESIA PHYSODES, *Cunningham*, (hatchet-leaved Daviesia.)—*Leguminacææ* § *Papilionacææ-Pultenææ*.—An elegant green-house shrub, growing erect from two to four feet

* There is another allied plant, with double flowers, which also bears this name in gardens.

high, with singular hatchet-shaped leaves, and bearing its flowers in short close racemes from the axils of the leaves, so as to form a leafy spike; they are butterfly-shaped and exceedingly handsome, variegated with several colours (orange, red, green, black) and very copiously produced in the spring months. It is a native of the Swan River settlement, whence it was sent to Kew about 1843.

DELPHINIUM VENUSTUM, *Maund*, (comely Larkspur.)—Ranunculaceæ § Helleboreæ.—A herbaceous perennial, growing two feet high, and upwards, with roundish deeply lobed leaves, and upright racemes of handsome lilac-coloured flowers, which are produced in August. It was raised in 1840, from Indian seeds, in the Birmingham Botanic Garden. It is not very hardy, but seeds freely, and is easily propagated.

DEUTZIA STAMINEA, *Wallich*, (wing-stamened Deutzia.)—Philadelphaceæ.—A small hardy shrub, with deciduous ovate lanceolate stalked leaves, and terminal corymbose panicles of white flowers, larger than those of hawthorn, produced very freely in May. It is a native of the Himalayas, and was introduced in 1841.

DIATEMMA OCHROLEUCA, *Hooker*, (pale yellow Diatemma.)—Gesneraceæ § Gesnereæ.—An erect branching herbaceous stove plant, with opposite hairy ovate leaves, and terminal panicles of numerous straw-coloured flowers, about an inch long, with a spreading limb something more than half an inch wide. It is rather pretty, and bears its flowers freely in the summer months. It is a native of Santa Martha, in New Granada, and was introduced by Mr. Purdie in 1844, and produced flowers in 1846.

DIDYMOCARPUS CRINITA, *Jack*, (hairy Didymocarpus.)—Gesneraceæ § Cyrtandreeæ.—A handsome erect stove plant, with a short herbaceous stem, rugose reddish lanceolate elongate leaves, from the axils of which proceed the flowers, which are white, pentstemon-like, and have two orange-yellow streaks on the lower part of the tube inside. It is a native of woods in the island of Penang, and in Malacca, and was introduced by Messrs. Veitch, of Exeter, in 1845. It is also called *Henckelia crinita*.

DIELYTRASPECTABILIS, *De Candolle*, (showy Dielytra.)—Fumariaceæ § Fumariæ.—A supposed hardy herbaceous perennial, with tufts of finely divided leaves, from among which springs the flower stem, which bears three or four axillary racemes of beautiful rose-coloured flowers; the stems grow a foot and a half high, and the racemes of flowers are from four to six inches long; it blooms in May. Introduced in 1844 by Mr. Fortune, from gardens in the north of China.

EDGORTHIA CHRYSANTHA, *Lindley*, (golden-flowered Edgorthia.)—Thymelaceæ.—A pretty greenhouse, or half-hardy shrub, with rod-like stems, bearing at the top, exclusively, the deciduous oblong-lanceolate leaves, eight or nine inches long. The flowers are bright golden yellow, covered with very thick soft hairs on the outside, and collected into heads of about two inches in diameter at the ends of the branches. It has not yet bloomed in this country. Sent from Chusan by Mr. Fortune in 1844. The genus Edgorthia is closely allied to Daphne.

EPACRIS DUBIA, *Lindley*, (doubtful Epacris.)—Epacridaceæ § Epacreeæ.—A doubtful species; it is a greenhouse shrub, with linear lance-shaped pointed leaves, and small white flowers, which are produced in the spring. Its history seems to be altogether obscure.

EPACRIS HYACINTHIFLORA, *of gardens*.—This is a hybrid plant, of free robust habit, and producing large, waxy, lilac-rose-coloured flowers. These flowers have more resemblance to those of a single Hyacinth than might be imagined in a shrubby plant. It appears to have been raised by the Messrs. Henderson, of the Pine-apple nursery.

EPACRIS IMPRESSA, *var. fulgens*, (fulgent Epacris.)—This variety differs from the well-known *Epacris impressa* chiefly in the colour of its flowers, which, instead of the original light rose-pink, are of a deep crimson colour. It is by far the best coloured variety of this pretty greenhouse shrub that we have seen. It was raised a year or two since by Mr. Fraser, of Lea-bridge road.

ERANTHEMUM ALBIFLORUM, *Hooker*, (white-flowered Eranthemum.)—Acanthaceæ § Justiciadæ.—A shrubby stove plant, with large opposite, sessile, obovate-oblong leaves, and having the shoots terminated by tapering elongated racemes, either solitary or two or three together, copiously furnished with clustered white flowers. It was raised from seed received from Bahia in 1844 (?) and blooms in the autumn; it will form a useful plant for growing in contrast with the blue flowered species.

ERICA JASMINIFLORA, *var. vittata*.—Ericaceæ § Ericææ.—A pretty seedling heath, raised by Mr. Barnes, of Bromley, in 1845 (?); it has inflated tubular flowers, contracted at the mouth, flesh-coloured, with a few deeper streaks.

ERICA JASMINIFLORA, *var. Whartonia*.—A handsome seedling heath, in the way of *E. jasminiflora*, with flesh-coloured inflated flowers contracted at the mouth; it was raised by Messrs. Rollisson, of Tooting, in 1845 (?).

ERICA SWAINSONI, *var. inflata*.—A handsome hybrid heath, raised by Messrs. Rollisson, of Tooting, in 1845 (?). It is something

in the way of *E. splendens*, having large inflated tubular flowers, which are of a lively salmon colour.

ERICA VERNONI, *var. superba*.—A fine seedling heath, raised by Messrs. Fairbairn, of Clapham, in 1845(?). It has long inflated flowers, contracted at the end, whitish, with a deep red-brown coloured calyx.

ERICA VENTRICOSA, *var. nana alba*.—A dwarf white small-flowered variety of *E. ventricosa*, raised by Mr. Pamplin, of Hornsey.

ERICA VESTITA, *var. eximia*.—A variety with small deep rose-coloured flowers, raised by Messrs. Henderson, of Edgeware-road.

ERIOSTEMON LINEARE, *A. Cunningham*, (linear-leaved *Eriostemon*).—Rutaceæ § Boroniceæ.—A pretty dwarf evergreen greenhouse shrub, with alternate, acute, linear leaves, and numerous flowers along the branches, growing singly, sometimes two together, from the axils of the leaves. It blooms very freely during the spring and summer months. Messrs. Loddiges imported seeds several years since from Sidney, New South Wales; but the plant is yet little known. It is also called *E. scabrum*, and *E. pubigerum*.

FAGRÆA OBOVATA, *Wallich*, (obovate-leaved *Fagræa*).—Loganiaceæ § Loganeæ.—A handsome stove shrub, not new, but rare. It has stout stems and branches, and opposite large smooth leathery leaves, sometimes oval, or sub-elliptic, but more generally obovate; the flowers are in a short sub-cymose terminal panicle, and are large, fragrant and cream-coloured, between bell-shaped and funnel-shaped, with five large spreading segments; they too are somewhat leathery in texture. It is a native both of Sylhet and Singapore. It requires a moist hot stove, and does best with bottom heat.

FORSYTHIA VIRIDISSIMA, *Lindley*, (bright green *Forsythia*).—Oleaceæ § Fraxineæ.—A deciduous greenhouse shrub, perhaps hardy, with erect four-cornered branches, growing from three to six feet high, and bearing opposite oblong leaves, which emit a slight balsamic odour: the flowers open in the spring, preceding the leaves, and grow in pairs; they are of a bright yellow colour. It was sent from the north of China to the Horticultural Society, by Mr. Fortune, in 1844.

FORTUANÆ CUINENSIS, *Lindley*, (Chinese *Fortunæa*).—Juglandaceæ.—A small tree (or shrub) allied to the walnut. It has largish pinnate leaves, of four or five pairs of leaflets of an ovate lance-shaped figure; the plant has the aspect of a *Rhus*. It is monœcious,* the male blossom being in tail-like scaly cat-

kins, and the female ones in terminal catkins, of a broader oblong form, which afterwards become a singular cone, with sharp pointed scales. It was sent in 1844 by Mr. Fortune from the hills of Chusan and Ningpo. Its hardness is not yet proved, but it is expected to stand out-doors, at least in the south of England and in Ireland. The Chinese use the fruit of this plant to dye their clothes black.

FRANCISCEA HYDRANGEÆFORMIS, *var.*—(hydrangea-like *Franciscea*).—Scrophulariaceæ § Salpiglossideæ.—This variety differs from the species which has hairy bracts and calices, in having these parts "quite glabrous"—that is, smooth and shining. It is a robust low shrub, with large alternate oblong-ovate leaves, and dense heads of blue-purple periwinkle-like flowers. This variety Mr. Bentham regards as a species, and calls it *F. capitata*. It flowers at various periods, and was introduced from Brazil. The *Francisceas* are also called *Brunfelsias*.

FUCHSIA CORALLINA, *of gardens*, (coral-flowered *Fuchsia*).—Onagraceæ § Fuchseæ.—A fine hybrid *Fuchsia*, raised at Exeter, by Messrs. Lucombe, Pince, and Co. It has much of the habit and character of the older kinds of *Fuchsia*, but is altogether of larger size; the leaves are large, of a reddish tinge; the flowers are also very large, with clear bright coral-red sepals and purple petals. It is a fine variety.

FUCHSIA MACRANTHA, *Hooker*, (large-flowered apetalous *Fuchsia*).—A handsome shrubby greenhouse plant, with large ovate leaves, and very long drooping tubular flowers, which grow sometimes in bunches at the end of the shoots, and sometimes along the stem, which is then terminated by a crown of leaves. The flowers are apetalous, that is, they have no petals; the tube, which is long, slender, and tapering, is of a pretty rose-colour, and is divided at the end into four ovate segments, which are greenish. Messrs. Veitch's collector found it in elevated woods, near Chasula, in Columbia, and it has also been found climbing on trees in lofty mountains at Andimareca, in Peru. It appears to bloom early in spring, and no doubt throughout the summer; and young small plants bloom profusely. Introduced in 1844.

FUCHSIA TETRADACTYLA, *Lindley*, (four-fingered *Fuchsia*).—A slender greenhouse shrub, growing about two feet high, with large fleshy roots, soft dull crimson branches, opposite, ovate-oblong, obtuse leaves, and small deep rose-coloured flowers, growing singly in the axils of the leaves; the style bears a large star-shaped stigma, divided into four fleshy finger-like rays. It is nearly related to *F. thymifolia* and *F. cylindrica*, two neat-looking small flowered kinds, but, like them, it is

* Monœcious signifies having the different sexes, in separate flowers, or flowerheads, on the same plant.

chiefly interesting to the botanist. It was received from Guatemala, from G. U. Skinner, Esq., by the Horticultural Society, in the spring of 1846.

FUGOSIA HAKEÆFOLIA, *Hooker*, (hakea-leaved *Fugosia*).—*Malvaceæ* § *Hibisceæ*.—A greenhouse shrub, growing erect, four or five feet high, and but sparingly branched. The leaves, which are few, are very variable, the lower ones being bipinnatifid with long linear segments; the intermediate ones with three segments, and upper ones entire. The flowers are large and handsome, issuing from the axils of the leaves, of a purple-lilac colour, paler towards the centre, and marked at the base of each of the five petals with a dark purple-red radiating spot. The flowers remain many days expanded, but the petals soon reflex. Raised from Swan River seeds by Messrs. Lucombe, Pince, & Co. in 1846, and blooms profusely in the summer. It was formerly called *Hibiscus hakeæfolius*, and is nearly allied to *H. lilacinus*.

FUGOSIA HETEROPHYLLA, *Spach*, (various-leaved *Fugosia*).—This is a rather pretty stove sub-shrubby plant, with elliptic lanceolate or oval leaves, and axillary roundish solitary flowers, of a pale yellow colour, with a pectinated (comb-shaped) blood-coloured spot in the centre. It was sent by Mr. Purdie from Santa Martha, in 1845, and was first flowered at Sion House. It is also called *Redoutea heterophylla*.

GARDENIA DEVONIANA, *Lindley*, (Duke of Devonshire's *Gardenia*).—*Cinchonaceæ* § *Gardeniæ*.—This is the finest of the *Gardenias* yet known. It is a stove shrub, the branches of which are unarmed. It has opposite stalked oblong-acuminate leaves, thin in texture, and solitary erect terminal flowers. The latter are very long—ten inches and a half before expansion—with a slender cylindrical tube, and funnel-shaped limb, with five obtuse lobes. They are pure white at first, and look like a long-tubed white lily, but gradually change to a pale yellow. It is a native of Sierra Leone, whence it was introduced in 1845, and is cultivated by Mr. Glendinning, nurseryman, of Chiswick, who has recently bloomed it.

GARDENIA FLORIDA, *var. Fortuniana*, (Mr. Fortune's *Gardenia*).—This is a very showy greenhouse shrub, resembling the larger *Gardenia* grown in our gardens, but having much larger blossoms, the latter being nearly four inches in diameter, and double, of a pure white, changing to light buff as they go off, and not unlike a very large double camellia, which it infinitely excels in its delicious odour. It has fine broad evergreen leaves, often six inches long. Introduced in 1845 to the garden of the Horticultural Society, by Mr. Fortune.

GESNERA BULBOSA, *var. lateritia*, (brick-

coloured tuberous *Gesnera*).—*Gesneraceæ* § *Gesneræ*.—*Gesnera bulbosa* is a tuberous-rooted stove species, with herbaceous stems, opposite ovate-elliptic leaves, and very showy long tubular scarlet flowers, very much prolonged on the upper side or lip. The present variety differs in having the racemes drooping, and the flowers pale brick-coloured. It flowers in the summer, and was introduced to Kew in 1844, by Mr. W. Purdie, from Santa Martha. It seems probable that *G. bulbosa* properly includes as varieties many other so-called species.

GESNERA ELLIPTICA, *Hooker*, (elliptic-leaved *Gesnera*).—A herbaceous stove plant, with upright stems and opposite elliptic obtuse leaves, and bearing its tubular two-lipped flowers in a handsome raceme at the ends of the branches. The colour of the flowers is variable; some varieties are bright red, others brick-coloured, and one is a clear pale yellow. The latter, called *var. lutea*, is the most distinct and remarkable. It flowers in May and through the summer months, and was sent to Kew by Mr. Purdie in 1844, from the mountains of Santa Martha, in New Grenada.

GESNERA HONDENSIS, *Humboldt*, (*Honda Gesnera*).—A very fine stove species, with tuberous roots, and herbaceous stems, growing a foot or more high, and thickly furnished with opposite acutely ovate leaves. The flowers are an inch or more long, tubular, and slightly swollen, and are produced from the axils either singly, or two or three together, on separate stalks. The colour is yellow, clothed, except near the end, with shaggy bright red hairs. It may be had in flower at different periods of the year. It was originally found by Humboldt, at Honda, and was introduced to this country by the agency of Mr. Purdie, in 1845.

GLOXINIA PALLIDIFLORA, *Hooker*, (pale-flowered *Gloxinia*).—*Gesneraceæ* § *Gesneræ*.—This species is near to *G. maculata*, but is smaller and more slender. It has an erect herbaceous spotless stem, with opposite leaves, broadly and obliquely ovate, and remotely and coarsely serrated. The flowers are large, solitary, and axillary, of a pale bluish-lilac tint, and shaped like those of other *Gloxinias*. Sent from Santa Martha in 1844, and flowers in October.

GLOXINIA SPECIOSA, *var. Passinghamii*, (*Passingham's Gloxinia*).—This plant is probably a variety of *G. speciosa*, though introduced from Rio Janeiro, where it was found in a deep ravine, much shaded, and in a very damp situation, high up the Corcovado mountain. It has large deep rich violet coloured flowers, which are produced during the summer. It was introduced about 1844.

GOMPHOLOBIUM HUGELII, *Bentham*, (Baron Hugel's *Gompholobium*).—*Leguminaceæ* § *Papilionaceæ*.—A slender erect greenhouse shrub, with trifoliate leaves, the leaflets of

which are narrow and linear, and bearing clear yellow butterfly-shaped flowers freely about the month of May. It is a native of New Holland, and is of recent introduction to this country.

GRÆLLSIA SAXIFRAGÆFOLIA, *Boissier*, (saxifrage-leaved Grællsia.)—Cruciferae § Pleurorhizae-Alyssidae.—A small hardy plant, suited for rock-work, rather showy, and flowering abundantly in July and August. It has long-stalked kidney-shaped or roundish leaves, coarsely notched, and smelling strongly of garlic. The flower stems are about nine inches high, and bear a compound corymb of small white flowers, resembling those of scurvy-grass. It is from the mountains of Persia. Introduced in 1844. Also called *Cochlearia saxifragæfolia*.

GYMNOPTERIS VESPERTILIO, *Hooher*, (bat-winged Gymnopteris.)—Polypodiaceae § Polypodeae.—A very handsome stove fern, with a short creeping stem, and very remarkable fronds. The sterile ones are divided into two lobes, which somewhat resemble the wings of a bat, whence the name. The fertile fronds are altogether different, being narrow and lanceolate, with four or five parallel stout veins, and covered on the under side with brown-coloured capsules. It was lately detected on the mountains of Java by Mr. Thomas Lobb.

HABROTHAMNUS CORYMBOSUS, *Endlicher*, (corymb-flowered Habrothamnus.)—Solanaaceae § Rectembryae.—A half hardy or greenhouse shrubby plant, of strong erect growth, with herbaceous stems, large ovate-lanceolate leaves, and corymbs of rose-coloured funnel-shaped flowers, with a five-lobed reflexed limb. These flowers are very freely produced at the ends of the branches. It is a native of Mexico, and was introduced in 1844. (?) It requires moderating, rather than too much encouraging in its growth.

HELIPTERUM HUMILE, *var. grandiflorum*, (large-flowered dwarf Helipterum.)—Compositae § Helichryseae.—One of the most beautiful of the greenhouse shrubby "everlastings." It is a variety of the species formerly called *Helichrysum humile*, and *specabile*, and which has also been named *Aphelaxis humilis*, but which De Candolle calls *Helipterum*, a name which has not been commonly adopted in this country. It forms a dwarf branching shrub with whitish stems, furnished with small narrow leaves which set close in to the stems; the flowers are large and of a rich rosy-purple colour, the interior being of a bright golden yellow: they belong to the class of "everlasting flowers." The plants continue for several months in flower during the summer. It was accidentally raised from Cape of Good Hope seeds, in 1838, by Mr.

Cattell, but has been only within this year or two brought into notice.

HIBISCUS JERROLDIANUS, *Paxton*, (Douglas Jerrold's Hibiscus.)—Malvaceae § Hibisceae.—A splendid stove herbaceous plant, producing tall slender stems varying from four to nine feet high, with fine digitate (composed of five narrow lobes) leaves, and solitary, axillary, very large rich crimson flowers. It flowers for a considerable period during the latter part of the year. It was raised in 1843, at Chatsworth, from seeds sent from Brazil, by Dr. Lippold. It does best planted out in a suitable climate.

HOLBÖLLIA LATIFOLIA, *Wallich*, (broad-leaved Holböllia.)—Lardizabalaceae.—A new hardy (or half-hardy) climbing plant, with leaves composed of three (sometimes five) large oval leaflets, and axillary racemes of very fragrant six-sepalled green flowers. It is a stout grower, and flowers out doors in March, the female flowers being much less powerfully scented than the males; the latter towards sunset fill the air, in favourable weather, for several yards around with a delicious perfume. It is both new and rare, and has been flowered lately by L. W. Dillwyn, Esq. of Sketty Hall, near Swansea, where it was growing against a south wall. Plants kept in the stove and conservatory manifested no disposition to flower. It is also called *Stauntonia latifolia* by Dr. Wallich.

IONOPSISIDUM ACAULE, *Reichenbach*, (stemless Violet-cress.)—Cruciferae (Brassicaceae) § Notorhizae-Lepididae.—This is a beautiful little annual plant for rockwork in a shady situation, and flowers in profusion from April to October. It forms a small tuft, with small heart-shaped leaves, and white (changing to lilac) cruciform flowers. It is found wild on basaltic and limestone soils, in Spain and Portugal, and also in Barbary, and has been for some years in cultivation under the names of *Cochlearia acaulis*, and *C. pusilla*.

IPOMŒA SIMPLEX, *Thunberg*, (simple-stalked Ipomœa.)—Convolvulaceae § Convolvuleae.—A handsome green-house plant. It has roundish tubers, not unlike those of a potato; the stems are from six inches to a foot long, slender, and sub-erect, and they are furnished with alternate narrow (almost) linear-lanceolate leaves; the flowers are large, rose-coloured, each on a short stalk, and they are produced at the base of the stem close to the tubers. It flowers in July, and requires only a very small pot and no trellis. After flowering the stems die down nearly to the tuber. Introduced from the eastern part of South Africa in 1844.

JACQUEMONTIA CANESCENS, *Bentham*, (hoary Jacquemontia.)—Convolvulaceae § Convolvuleae.—A twining perennial green-

house plant, with oblong leaves, heart shaped at the base, and as well as the stems covered with a short downy matter; the flowers are convolvulus-like, an inch and a half across, of a clear bright blue, and growing in close cymes of from nine to twelve each, on stalks shorter than the leaves. It is a free growing slender greenhouse climber, of neat habit, and bearing very handsome flowers. It is cultivated in the garden of the Horticultural Society, where it was raised from seeds collected by Mr. Hartweg, near the village of Fusagasuga, in Bogota, in 1845. (?)

JASMINUM NUDIFLORUM, *Lindley*, (naked-flowered Jasmine).—*Jasminaceæ*.—A pretty hardy (or half-hardy) deciduous species of jasmine, which bears large pale yellow primrose-like flowers during the winter, after the leaves have fallen; the branches are angular, furnished with opposite leaves composed of three ovate leaflets, and these are succeeded by the flowers. It was sent to the Horticultural Society, in 1845, by Mr. Fortune, from China. Mr. Fortune considers it as being quite hardy, but as a winter flowering plant it will be very useful for the green-house. From its slender habit, its appearance is improved by grafting at a short distance from the ground.

LEIANTHUS UMBELLATUS, *Hooker*, (umbellate *Leianthus*).—*Gentianaceæ* § *Gentianeæ*.—A stove shrub of erect habit, and growing to a large size. It has opposite lanceolate leaves, broadest towards the points, and often a foot or more in length: from the axils of the leaves a peduncle or flower stalk arises as long as the leaves, bearing a dense umbel of small greenish-yellow funnel-shaped flowers, with very numerous projecting stamens, much longer than the flowers themselves; it flowers in May. It is a native of Jamaica, whence Mr. Purdie sent it to Kew in 1843.

LESCHENULTIA SPLENDENS, *Hooker*, (splendid scarlet *Leschenaultia*).—*Goodeniaceæ* § *Goodeniæ*.—An exceedingly beautiful green-house shrub, of bushy and branching habit, growing from one to two feet high; the leaves are slender (heath-like) in the way of the other kinds in cultivation; the flowers are large, shaped like *L. biloba*, but of a peculiarly rich and brilliant scarlet colour. It was sent from Australia by Mr. J. Drummond, to Messrs. Lucombe, Pince, & Co. in 1844 (?), and has flowered with them. Two varieties appear to be possessed by Messrs. Lucombe & Co. The one flowering in bunches, and the other (called *var. stricta*) usually bearing solitary flowers, and these deeper coloured, with narrower segments.

LIEBIGIA SPECIOSA, *Blume*, (showy *Liebigia*).—*Gesneraceæ* § *Cyrtandreeæ*.—An erect growing sub-shrubby perennial, with herbaceous stems, requiring a cool stove, and

growing two feet high and upwards, with large opposite elliptic oblong pointed leaves, toothed at the margin, and downy: the flowers are produced several together on short stalks from the axils of the leaves, and are rather hidden by them; they are shaped like a *gesnera*, whitish with a yellow throat, the outer part of the tube being of a deep violet colour. It is found on the banks of rivers in Java, from which country it was introduced in 1845, by Messrs. Veitch of Exeter. Like many similar plants, it blooms best in a greenhouse. It is also called *Tromsdorffia speciosa*.

LILIUM ATROSANGUINEUM, *varieties*, *Liliaceæ*, § *Tulipææ*.—From *L. atrosanguineum*, fertilised by *L. bulbiferum*, Mr. Groom has been successful in raising several fine hardy hybrid lilies, which are remarkable for their stiff upright habit, dwarf stature, and numerous brilliant coloured flowers. The following are some of the varieties: *Emperor Alexander*, twenty-three inches high, fine large deep orange flowers, with dashes of dark red-brown; *Talisman*, twenty-one inches high, flowers orange coloured, with dark blotches; *Ibrahim Pacha*, twenty-one inches high, flowers crimson, with blotches of dark red-brown; *Prince Albert*, eighteen inches high, flowers deep crimson, with spots and dashes of dark brown; *Rubens*, eighteen inches high, flowers orange-red spotted; *Voltaire*, fifteen inches, flowers orange, spotted. The flowers of all the varieties are large and much expanded.

LILIUM BRONOSARTII, *Maund*, (*Bronosart's Lily*).—This is a handsome hardy bulb, but is doubtfully distinct from *L. lancifolium album*: it was received from some continental nursery under the name of *L. Bronosartii*, and is supposed to be one of the *slight varieties* which have been honoured with a name. It grows erect, three or four feet high, and has lance shaped leaves and white flowers of great beauty. The varieties of *L. lancifolium* are found to be quite hardy, and are fine autumn flowering plants.

LILIUM SANGUINEUM, *Lindley*, (blood-red *Lily*).—A very handsome dwarf half-hardy lily, growing from twelve to eighteen inches high, with numerous scattered ovate lanceolate leaves, and a solitary, large, erect, orange-red flower, speckled with black towards the base of the perianth. It is supposed to be a plant of Japanese origin, and to have been one of the discoveries of Siebold. It blows in May and June. Introduced —(?)

LOBELIA GLANDULOSA, *Walter*, (glandular *Lobelia*).—*Lobeliaceæ* § *Lobeleææ*.—A hardy herbaceous species, belonging to the *Rapuntium* division of *Lobelias*. It is a good deal like the old *L. syphilitica*, but much less showy. The stem grows erect, and is somewhat hairy; the leaves are lanceolate, and

glandularly serrated, as are also the bracts; the flowers are in a terminal racemose spike, small, and pale reddish lilac. It grows two and a half feet high, and flowers in September and October. Introduced from North Carolina to the garden of the Horticultural Society. It is called also *Lobelia crassiuscula*, and *Rapuntium glandulosum*.

LYCOPodium CÆSIUM, *Lindley*, (grey Club-moss.)—Lycopodiaceæ.—A handsome branching plant from China, growing well in a greenhouse, or in company with the other Lycopodiums in a damp cool stove. It is of a very pretty spreading habit, and the leaves are of a greyish or glaucous hue. It was introduced from China in 1846.

LYSIMACHIA CANDIDA, *Lindley*, (white-flowered Loosestrife.)—Primulaceæ § Primulidæ.—A herbaceous perennial of compact habit, growing about a foot high, with narrowly oval root leaves, about four inches long, those on the stems being very narrow and somewhat spatulate; they are all marked by scattered dark purple dots, which are not seen except by transmitted light. The flowers, which grow in close racemes, are white, and very profusely produced. It was raised in the spring of 1846, from the soil contained in one of the boxes sent from China, by Mr. Fortune, to the Horticultural Society.

MANETTIA UNIFLORA, *Humboldt, B. et K.* (one-flowered Manettea.)—Cinchonaceæ § Cinchonidæ.—A pretty stove climber, hirsute in every part, with ovate acuminate leaves, and tube shaped flowers of a deep rose colour, becoming very pale before falling off; they are produced singly on the branches in great profusion, from September throughout the winter. It was introduced from New Andalusia and Santa Martha in 1844.

MASTACANTHUS SINENSIS, *Endlicher*, (Chinese Beardwort.)—Verbenaceæ.—A neat autumn flowering, green house, herbaceous perennial, erect, and from one and a half to two feet high. It has oblong oval opposite leaves, deeply and obtusely serrated; the flowers are in close whorls at the upper part of the stems, and are small, numerous, and of a violet colour, from which circumstance, and from its period of flowering, rather than from anything striking in the plant itself, it is likely to be useful in cultivation. It flowers in autumn. The Horticultural Society received it in 1844 from their collector in China, where it grows wild in the neighbourhood of Canton, also at Chusan and Koo-lung-goo. It is also called *Barbula sinensis*.

MULGEDIUM MACRORRHIZON, *Royle*, (large-rooted Mulgede.)—Compositæ § Hieraciæ.—A herbaceous perennial, nearly or quite hardy, and suffering more from wet than cold. It has thick fleshy roots, which are much in-

jured by damp; the stems are trailing, two feet long, and but a few inches high; the leaves are amplexicaul, pinnatifid, with large rounded lobes; the flowers are produced in a sub-corymbose manner; they are pale blue, and about the size, shape, and colour of those of wild endive or succory (*Cichorium Intybus*). It is a pretty plant for rock-work, flowering through September and October, and increased by seeds. Raised in 1844, from seeds collected in Cashmere.

NEPTUNIA PLENA, *Bentham*, (double yellow Water sensitive.)—Fabaceæ (Leguminosæ) § Mimoseæ.—An interesting mimosa-like perennial water plant, with bipinnated sensitive leaves, and ovate globose heads of pale yellow flowers. The stem is long, prostrate at the base, spongy, and floating, throwing out innumerable thread-like roots. At the base of the leaves are two membranous oblique cordate stipules; and the peduncles, which support single heads of flowers, have one or two bracts resembling the stipules. It has been sent from Jamaica to this country, and seems also to be common to all parts of tropical America. It requires a stove. It has many synonymes; as *Mimosa plena*, *M. punctata*, *M. adenanthera*, *Desmanthus plenus*, *D. punctatus*, *D. polyphyllus*, and *Neptunia polyphylla*.

NYMPHÆA DENTATA, *Schumacher*, (tooth-leaved Lotus.)—Nymphæaceæ § Nupharidæ.—A stove aquatic plant, with large floating orbiculate ovate leaves, strongly and irregularly toothed. The flowers are large and white, a good deal like those of the common water-lily (*Nymphæa alba*). It was introduced from Sierra Leone by Messrs. Lucombe, Pince, and Co. about 1845, and produced its flowers in their stove in August 1846. It seems to be extensively distributed in Africa, a country which is famous for stove aquatics, the magnificent *Victoria regia*, as well as many others, being found there.

ONCIDIUM UNGUICULATUM, *Lindley*, (unguiculate, or clawed Oncid.)—Orchidaceæ § Vandææ-Brassidæ.—An epiphytal species, with oval pseudo-bulbs, bearing two or three lance shaped leaves a foot long. The flower-stem, or scape, is six feet high, divided into several branches, on which the large flowers are produced; they are very large and showy, the sepals and petals being greenish yellow, spotted with brown; and the lip three-lobed, of a pure bright yellow, the middle lobe being remarkable for the length of its base or claw. It is one of the finest yellow orchids in cultivation. Purchased at a sale of Mexican orchids.

OPHIOPOGON PROLIFER, *Lindley*, (proliferous Ophiopogon.)—Liliaceæ § Ophiopogonæ.—An evergreen herbaceous stove-plant,

with a slender stem, not thicker than a swan's quill, and bearing at intervals clusters of bright green sword-shaped leaves, and small white flowers. It was received from Penang. Not very showy.

OPHRYS CORNUTA, *Stevens*, (horned Ophrys.)—*Orchidaceæ* § *Ophreæ-Serapiadæ*.—A curious little terrestrial orchid, resembling our native bee orchis, but remarkable from the two narrow spreading horns of the flowers. The sepals are lilac, and the lip is curiously and variously marked; sometimes deep chocolate, chequered with white; in others reddish, marked with green. It is found in the Crimea, in Dalmatia, in Hungary and Macedonia, and recently by Dr. Herbert in Corfu. Also called *O. bicornis*, and *O. æstifera*.

OXALIS ARTICULATA, *Savigny*, (jointed-rooted Wood-sorrel.)—*Oxalidaceæ*.—A pretty half-hardy species in the way of *O. Deppei*. It is a bulbous perennial, with trifoliate leaves and deep rose-coloured flowers, produced in July and August, and growing eighteen inches high. It is a native of Monte Video, and may either be grown in a frame or in a dry border, protected by moss or litter.

OXALIS SENSITIVA, *Linnaeus*, (sensitive Wood-sorrel.)—An interesting dwarf annual stove plant, with a stem an inch or two long, from which proceeds a tuft of handsome pinnated leaves, which are sensitive, and numerous flower stems, bearing several small yellow flowers at the top. It is found extensively in the tropical parts of Asia, and often grows up among the soil of plants received from the East Indies. Introduced in 1844. (?)

PÆONIA WITTMANNIANA, *Lindley*, (yellow Pæony.)—*Ranunculaceæ* § *Helleboreæ*.—The most remarkable trait in the character of this plant is the yellow colour of its flowers, which character is at least a novelty among pæonies. It is not like the splendid double kinds grown in our gardens, but has single flowers of medium size. The plant is herbaceous, with triternate leaves, the leaflets of which are oval and entire. It is quite hardy, and flowers in May. Nothing is known certainly of its history, except that it was received by the Horticultural Society from Mr. Hartwiss (whose manuscript name is adopted), the director of the Nikita Garden in the Crimea. It is very costly.

PASSIFLORA DIFFORME, *Humboldt*, *B. et K.* (various-leaved Passion-flower.)—*Passifloraceæ*.—A curious stove species, of climbing habit, with leaves having two (scarcely three) horizontally divergent acuminate lobes, and small green and black flowers, produced during autumn and winter. Humboldt found it in New Grenada; and it has been recently sent by Mr. Purdie from Santa Martha.

PHLEBODIUM NITIDUM, *J. Smith*, (shining Phlebodium.)—*Polypodiaceæ* § *Polypodeæ*.—A stove fern, with a creeping chaffy rhizoma, and oblong elliptical fronds, obtuse and rounded at the apex, acute at the base. It was introduced from Honduras in 1844.

PHLOX CLARKIODES, *Maund*, (clarkia-like Phlox.)—*Polemoniaceæ*.—Under this name Mr. Maund has figured a pretty species of Phlox, but without any particulars of its history further than that it is a native of America, and was introduced in 1844. It is a middle sized herbaceous perennial species, flowering in August, with deep lilac flowers, remarkable for having the tube split, which gives them some resemblance to a *Clarkia*.

PHYSOSTELMA CAMPANULATA, *Decaisne*, (bell-flowered Physostelma.)—*Asclepiadaceæ* § *Stapelieæ*.—This is a neat climbing evergreen shrub, of medium growth, the branches furnished with opposite oblong acuminate leaves, four inches long; the flowers grow in dense umbels; individually they are an inch in diameter, flatly bell shaped, of a waxy texture, and shining; in the centre is a small waxy star; the whole is cream coloured. It is a stove plant, blooming in October, and is both pretty and singular. It was imported from Java by Messrs. Veitch in 1845, and flowered in their nursery in the autumn of 1846. Also called *Hoya campanulata*.

PINGUICULA ORCHIDIODES, *Alph. De Candolle*, (orchis-like Butterwort.)—*Lentibulariaceæ*.—A handsome dwarf perennial greenhouse plant, with a tuft of obovate spatulate concave leaves, from among which the flower stems arise, each bearing one large handsome purple flower, consisting of five spreading lobes, and a long cylindrical spur. It has bloomed during the winter. Introduced in 1844 (?) from Real del Monte, in Mexico, to Kew, where it is cultivated in a cool stove, in pots, kept plunged among sphagnum moss, it being a sub-aquatic.

PINUS CEMBROIDES, *Zuccarini*, (Cembra-like Pine.)—*Pinaceæ* § *Abietæ*.—A hardy tree, allied to *Pinus Llaveana*. Its three-cornered needle-shaped leaves are from an inch to an inch and a half long, and grow in threes: the cones grow singly, and are bluntly conical, about three inches long, formed of blunt scales. It was sent by Mr. Hartweg to the Horticultural Society from the cold districts of the mountain Orizaba in Mexico, 10,000 feet above the sea, where it grows thirty feet high.

PINUS ORIZABÆ, *Gordon*, (Orizabean Pine.)—A tree of moderate size, with three-cornered leaves, from eight to nine inches long, growing in fives. The cones grow in clusters of four or five; they are four or five inches long, and the scales are slightly hooked. It was sent by Mr. Hartweg to the Horticultural Society

from the mountain Orizaba. No evidence has yet been gained of its hardness.

PITCAIRNIA UNDULATIFOLIA, *Hooker*, (broad waved-leaved Piteairnia).—*Bromeliaceæ*.—A stove herbaceous plant, of very showy character, growing from one to two feet high, with long and broad sword-shaped leaves, the stem being terminated by a close cone shaped spike of flowers; the petals of the flowers are very long and narrow, white, and emerge from the bosom of the large broad scarlet bracts which invest the top of the stem. It flowers in May, and was probably introduced from Brazil.

PITTOSPORUM GLABRATUM, *Lindley*, (shining-leaved Pittosporum).—*Pittosporaceæ*.—An evergreen greenhouse shrub, with obovate leaves, rather blistered on the surface, and shining as if varnished: the flowers are small, of a pale greenish white, and very sweet-scented, and often grow in terminal umbels. It was introduced in 1845, from Hong Kong, by Mr. Fortune, who found it growing on the tops of hills, and flowering in the spring.

PLATYCERIUM BIFORME, *Blume*, (two-formed Platycerinum).—*Polypodiaceæ* § *Polypodeæ*.—One of the most curious and noble of the epiphytal ferns. The sterile fronds (leafy expansions) may be likened to the two spread flaps of a saddle (other dead and withered ones lying beneath these); from between these two a new frond breaks out, and with a very rapid growth (six weeks or two months) it extends and reaches beyond one of the previous flaps; when this has attained its size another breaks out from the same frond, and covers the other flap, and so on. The fertile fronds issue from the same point, and project forward three feet or more in length, cut into a number of deep segments or lobes. There is something peculiarly delicate and beautiful in the texture, colour, and veining of the fronds. It grows in the stove, attached by numerous fibres against the flat surface of a perpendicular board. It is found in the Malay Islands and the tropical parts of the East Indies and New Holland. It is also called *P. grande*; *Acrostichum grande*; *A. fuciforme*, and *A. biforme*.

PLATYCODON GRANDIFLORUM, *Alph. De Candolle*, (great flowered Platycodon).—*Campanulaceæ* § *Lightfootæ*.—Under this name, a somewhat handsome plant, sent from China by Mr. Fortune, has been identified with the old *Campanula grandiflora*. It is a dwarf growing plant, with ovate lanceolate leaves, and bearing large, deep blue, bell shaped flowers, at the latter part of the summer.

PLATYCODON GRANDIFLORUM, *var. albus semiplenus*.—A greenhouse shrubby campanular-flowered plant, with ovate oblong leaves, and white flowers, which consist of two

bell-shaped corollas placed one within the other, the five lobes of each of which are so exactly alternate, as to form a large white star of ten points: in other respects the plant resembles its blue flowered type. Mr. Fortune sent it, in 1845, from China, where he found it in the nursery gardens near Shanghai.

PLEROMA ELEGANS, *Gardner*, (elegant Pleroma).—*Melastomaceæ* § *Osbeckiæ*.—A very handsome stove shrub, growing five or six feet high, and branching; it has opposite ovate, or elliptical leaves, marked, as is usual in this family, by prominent longitudinal ribs; the flowers are large and of a rich velvety purple, and usually grow singly at the ends of the shoots; they are produced in the summer. It is a native of the Organ mountains in Brazil, and was sent thence by Mr. Lobb, to Messrs. Veitch of Exeter, with whom it bloomed in 1846.

POLYGONUM COMPLEXUM, *A. Cunningham*, (complex Polygonum).—*Polygonaceæ* § *Polygonææ*.—A suffruticose half-hardy species, of trailing twiggly habit, growing into dense bushes. It has small sub-orbiculate, or kidney shaped fleshy leaves. It flowers in December only. It is not ornamental, except as regards its neat foliage and habit. Introduced from New Zealand in 1842.

POLYPODIUM LACHNOPODIUM, *J. Smith*, (downy Polypody).—*Polypodiaceæ* § *Polypodeæ*.—A strong growing stove fern, with bi-tripinnatifid fronds, three feet or more in length, the pinnæ one foot, and the pinnules two to four inches long. It has been introduced from Jamaica, and is quite new to our gardens.

PRIMULA INVOLUCRATA, *Wallich*, (involved Primrose).—*Primulaceæ* § *Primulidæ*.—A hardy perennial rock plant, growing best in a somewhat shaded situation. When not growing the plant forms a large egg shaped bud, almost a bulb; this produces a tuft of oblong, obtuse, shining leaves, and a scape six or nine inches high, bearing three or four sweet-scented flowers, about the size of a cowslip, at first white, or slightly yellow, and in age acquiring a tinge of blush. It flowers in the open air, in March; and is from the north of India, at an elevation of 11,500 feet, growing near water. It is the *P. spathulata* of Royle.

PTEROSTIGMA GRANDIFLORUM, *Bentham*, (large-flowered Pterostigma).—*Scrophulariaceæ* § *Gratiolææ*.—This is an upright growing stove perennial, in its wild state not more than a foot or eighteen inches high, but when cultivated growing three feet and upwards, by which its beauty is lessened. The stems are round, the leaves opposite, ovate, crenate; the flowers are nearly as large as those of a digitalis, and grow singly from the axils of

the leaves (in wild specimens they are in a close spike); they are deep violet coloured. It was sent by Mr. Fortune, in 1844, from Hong Kong, as a herbaceous plant, growing on hill sides and near streams. It multiplies easily from cuttings. Though treated as a stove plant, it will probably prove hardy enough to stand in a green-house.

RHODODENDRON HYACINTHIFLORUM, *of gardens*, (hyacinth-flowered Rose-bay.)—*Ericaceæ* § *Rhododendrea*.—A handsome evergreen hardy shrub, with double or at least semi-double flowers, of small size, and of a purplish colour. It is a very interesting looking plant. Mr. Waterer imported it from the continent a few years since.

RHODODENDRON ROBUSTUM, *Loddiges*, (robust Rose-bay.)—A fine hardy shrub, with magnificent foliage, but which does not appear to have flowered in this country. It is probably very near *R. campanulatum*, if not one of its varieties. It is from the Himalayan mountains, and was raised by the Messrs. Loddiges, of Hackney.

RHYNOSPERMUM JASMINOIDES, *Lindley*, (jasmine-like *Rhynchospermum*.)—*Apocynaceæ* § *Wrighteæ*.—A slender evergreen climbing shrub, rooting like ivy along the branches where they touch a damp surface. It contains a milky fluid. The leaves are oval and opposite; the flowers white and deliciously sweet-scented: they grow in irregular corymbs. It does best in an intermediate temperature, between that of a stove and greenhouse. It was collected at Shanghai, by Mr. Fortune, and was introduced in 1844.

SARCOSTEMMA CAMPANULATUM, *Lindley*, (bell-shaped *Sarcostem*.)—*Asclepiadaceæ*.—A pretty greenhouse climber, of a shrubby nature, with broad heart-shaped leaves, and loose bunches of flowers from the axils; the flowers are broad, bell shaped, greenish yellow, marked inside with purple, and are freely produced in the autumn. Probably a native of Peru, and introduced in 1845; it is cultivated by Messrs Veitch.

SAXIFRAGA THYSANODES, *Lindley*, (coarse-fringed Indian Saxifrage.)—*Saxifragaceæ*.—A robust hardy perennial, growing six or eight inches in height, with a tuft of broad obovate coarsely fringed leaves, from among which issues the scape, bearing a small raceme of rather large white flowers, in the month of April. It is a native of northern India, whence it was received by the Horticultural Society in 1845. It is near the well-known cultivated *S. ligulata*.

SEDUM KAMTCHATICUM, *Fischer*, (*Kamtschatka Stone-crop*.)—*Crassulaceæ* § *Crassuleæ*.—A pretty hardy herbaceous perennial, suitable for rock-work. It has small obovate leaves, and bears bright yellow flowers from

June to August. Said to have been collected by Dr. Schrenk, on the Chinese limits of the south of Soongaria. It has been but recently introduced.

SILENE SCHAFTA, *Gmelin*, (*The Schafta*.) *Caryophyllaceæ* § *Sileneæ*.—A beautiful little procumbent herbaceous perennial, quite hardy, and exceedingly well adapted for rock-work. It produces many spreading slender stems, forming a compact tuft, with small oval leaves, and pretty purple-rose flowers, which are freely produced from June to October. It is a pretty alpine plant, and desirable from continuing so long in flower. It inhabits rocks on Mount Keridach, in the Russian province of Talysh. Introduced in 1844. (?)

STACHYTARPHETA ARISTATA, *Vahl*, (*aristate Bastard-vervain*.)—*Verbenaceæ*.—A suffrutescent plant, with herbaceous stems, and opposite ovate acute serrated leaves. The branches terminate in a very long spike, with densely imbricated orbicular ovate bracteas, terminating in a long subulate point; the flowers have a curved tube, and a deep blackish purple limb, of five rounded lobes; they continue to open in succession throughout the length of the spike. It was introduced from Santa Martha, in 1845, and flowers in October.

STENANTHIUM FRIGIDUM, *Kunth*, (*frigid Stenanthium*.)—*Melanthaceæ* § *Veratreæ*.—A hardy perennial, with a leafy stem, three feet high, grass-like leaves, and dull blackish purple flowers, growing in drooping panicle leafy racemes, at the top of the stem, and blooming in June and July. Received by the Horticultural Society, in February, 1846, from Mr. Hartweg, who found it at an elevation of 10,000 feet, on the mountains of El Guardo. It has no other interest than its poisonous qualities, being supposed to furnish a part of the venomous *Sahadilla* seeds of commerce, from which *Veratria* is prepared. It bears also the name of *Veratrum frigidum*. It requires to be grown in peat soil, in rather a moist situation in summer.

STIGMAPHYLLON MUCRONATUM, *A. de Jussieu*, (*mucronate-leaved Stigmaphyllon*.)—*Malpighiaceæ* § *Banistereæ*.—A twining greenhouse plant, with thick fleshy roots, and opposite ovate oblong leaves, terminated by a small point; the flowers grow in small clusters, and are of a rich canary yellow colour, rather larger than a shilling, with spoon-shaped petals delicately fringed and wrinkled. It requires the ordinary treatment of greenhouse climbers, being of free growth; but having a fleshy root it must not be over-watered when not growing. Native of Mexico. It is sometimes called *Banisteria mucronata*.

TETRANTHERA JAPONICA, *Sprengel*, (*Japan*

Tetranthera.)—*Lauraceæ*.—A desirable low greenhouse shrub, with coriaceous oblong leaves, deep glossy green above, and downy and ferruginous beneath; the flowers, which are inconspicuous, are produced in December. It is a native of Japan, and was introduced in 1843. Also called *Litsæa japonica*, and *Tomex japonica*.

TETRATHECA VERTICILATA, *Paxton*, (whorled-leaved *Tetratechea*.)—*Tremandraceæ*.—A very neat and elegant evergreen greenhouse shrub, with slender pubescent branches, linear hairy leaves, growing in whorls, and axillary flowers, on long slender stalks; these consist of five cordate ovate petals, and are three quarters of an inch across, and of a light violet purple, red at the base. It flowers freely during the spring and summer, and is a very pretty addition to its class. Raised from Swan River seeds, by Mr. Low, of Clapton, and flowered by him in the early part of 1846. It is also known in gardens as *Tetratechea speciosa*, and *Tremandra verticillata*.

TORONIA CONCOLOR, *Lindley*, (one-coloured *Torenia*.)—*Scrophulariaceæ* § *Gratiolæ*.—A perennial greenhouse plant, with trailing angular stems, opposite heart-shaped coarsely serrated leaves, and large flowers, of a clear porcelain blue colour, somewhat deepest in the eye; these flowers grow from the axils of the leaves, and are produced at the end of summer and through the autumn. The habit is strictly trailing, and the plant has a good effect when suspended, and allowed to hang down over the pot. It would probably grow on rock-work in a warm situation out of doors in summer. Mr. Fortune introduced it from China to the garden of the Horticultural Society, in 1845; in its native country it inhabits marshy situations, and consequently must not be kept too dry in a cultivated state.

TORENIA ASIATICA, *Linneus*, (Asiatic, or large-flowered *Torenia*.)—This is said to be an annual, and a stove plant; there appears however some doubt as to the former, and it is found to grow well in a greenhouse, and even out-doors, in summer, in sheltered situations; perhaps however it succeeds best in a warm greenhouse. It is a beautiful little branching sub-shrubby plant, with opposite ovate, or ovate-lanceolate coarsely serrated leaves, and large axillary blossoms, nearly like those of the mimulus in form, but with four instead of five lobes; they are of a beautiful delicate porcelain blue-lilac, and three of the lobes have a large deep purple blotch. It flowers throughout the summer, and roots freely from cuttings. It was raised at Kew in 1846, from seeds received from Courtallam, and is found extensively distributed in the East Indies, including the Alpine

regions. It is the *T. hians* and *T. vagans* of Roxburgh.

TROPÆOLUM CRENATIFLORUM, *Hooker*, (notched petalled Indian-cress.)—*Tropæolacæ* § *Tropæoleæ*.—A somewhat slender perennial climbing plant, with long straggling stems, rather large semi-orbicular peltate leaves, with five obtuse lobes, and yellow flowers about half as large as those of the common garden nasturtium; the two upper petals have a few purple streaks. It was introduced by Messrs. Veitch, in 1845, from Pillao and Chagula in Peru. Though less showy than many of the tropæolums, it is an interesting addition to the family. It may be grown in a greenhouse, or in the open air in summer, and blooms throughout the summer.

VERONICA SALICIFOLIA, *Forster*, (willow-leaved Speedwell.)—*Scrophulariaceæ* § *Veroniceæ*.—A handsome shrubby greenhouse plant, of a dense bushy habit, with opposite lance shaped leaves, from the axils of which the flowers of a whitish colour are borne in long drooping densely covered spikes. It blooms in the autumn months. Introduced from New Zealand in 1843. It is the same plant as *V. Lindleyana*, noticed at p. 41; at least no material difference presents itself. It is of easy culture.

VERONICA SPECIOSA, *var. rosea*, (rose-coloured showy Speedwell.)—This is a rose-coloured variety of the robust shrubby veronica, now common in greenhouses, called *V. speciosa*, which is of erect vigorous habit, with dark green ample rounded leaves, and dense upright spikes of purple flowers. The variety differs only in having flowers of a deep rose-red, instead of the purple, colour; and is a much handsomer plant than its parent. It is a hybrid, raised in 1845, by Mr. Oates, gardener to Sir J. Rowley, Bart., of Tendring-hall, Suffolk.

WEIGELA ROSEA, *Lindley*, (rose-coloured Weigela.)—*Caprifoliaceæ* § *Lonicereæ*.—A beautiful (apparently hardy) shrub, forming loose clusters of from three to five flowers, at the end of every little side branch; the flowers are rather more than an inch long, monopetalous, tubular, with five equal segments, pure white inside, deep rose externally. The leaves are opposite, nearly sessile, elliptical; the flowers are axillary as well as terminal. In the north of China, it blooms in April. Introduced by Mr. Fortune, in 1844.

* * * See also a list of Orchids at p. 311.

THE BEET.

SEVERAL varieties of two species of Beet are grown for various culinary purposes. Those grown for their roots are varieties of the common Beet (*Beta vulgaris*), and those grown for their leaves and leaf-stalks, under

the names of white and green Beet, are varieties of the *Beta cicla*. Both of these plants are natives of the south of Europe, and the first appears to have been introduced to this country about 1548; the other in 1570.

The various sorts of Beets cultivated for their roots appear to be much better understood on the continent than here, as is the case with very many other vegetables. But as one variety is enough for even the largest establishment, the English gardener is generally satisfied if he obtains a good flavoured and bright coloured sort. However, the following have been distinguished.

The *Large-rooted Red Beet* has large heart-shaped leaves, of a lurid green colour, more or less inclining to purple, with the stalks and veins of a deep red colour. Root large, growing partly out of the ground, thick, and ending in strong fangs. When cut, of a bright red, with white concentric rings. It is of good flavour, but boils soft, and is too large and coarse to be recommended.

The *Long-rooted Red Beet*, grows almost entirely beneath the soil, the root tapering gradually, and attaining a considerable length and diameter. The leaves are smaller and of a more shining dark purple than the last; they also spread out more and form a thicker tuft. The flesh is bright scarlet all through, when cooked of a deep pink, but apt to acquire an earthy taste in some soils, and to be stringy.

The *Dwarf Red Beet*, is smaller in all its parts than the last, with leaves of a deep dull purple. The root acquires nearly the same size, and is generally well shaped, and of a very deep colour, both fresh and cooked. It is tender and of excellent flavour.

The *Turnip-rooted Red Beet*, is a very early variety, being fit for use a considerable time before the others, and is well adapted for shallow soils. The leaves are of medium size, spreading, of a shining green, the leaf-stalks and veins light coloured, tinged with purple. The root is from four to five inches broad and about the same long, of a purplish red colour, pink when cooked, rather coarse, but more tender and better flavoured than the others early in the season.

The *Small Red Beet*, is a French variety of considerable merit. The leaves are small, rounded, and of a shining dark lurid purple colour. The root grows chiefly under ground, not above two inches over the crown, and tapering to a considerable length. The colour is a much deeper crimson than the foregoing sorts, and cooks of a high colour also, and is very tender and delicate. It is sometimes confounded with the next.

The *Red Castelnauary Beet*, is a very distinct variety, with a thick crown of leaves, spreading low on the ground, green, with

purple veins and footstalks. The root grows entirely below the surface, is about two inches in diameter by nine inches long, tapering gradually, and is of a deep purple colour, which it retains when cooked, when it is very sweet and tender. An excellent variety, especially for small gardens.

The *Green-topped Red Beet*, is a variety a good deal grown in the north, with dull green leaves, and in habit similar to the dwarf red Beet.

The *Large Yellow Beet*, is a good deal like the large red, except in colour, growing considerably out of the ground, with large dark green leaves, and yellow veins and leaf-stalks. The flesh is of a pale yellow, but it is too large and coarse for general use, although very sweet and tender.

The *Yellow Castelnauary Beet*, resembles the red variety of that name very closely, except in colour, which is of an agreeable orange outside, but paler within. The root attains a diameter of about three inches, and a length of about eight, generally terminating in strong fangs. When cooked it is tender, yet firm in the flesh, and very sweet, being by far the best variety for table in every point but colour.

The different varieties of Mangold Wurtzel are sports from the same original stock as the garden beets, but being strictly agricultural roots, nothing more need be said of them here than that the yellow varieties are the most solid fleshed, and contain the greatest amount of saccharine matter.

The varieties of the white Beet (*Beta cicla*) are grown entirely for their leaves and leaf-stalks, the former as a substitute for spinach, to which however it is much inferior, and the latter as a substitute for sea-kale, to be stewed like celery, or cooked in various other ways. As before observed of the other, it is much more attended to on the continent than with us.

The *White or Green Beet* is the variety most usually cultivated here, but is much inferior to some of the others. The leaves spread low and wide over the ground, and with their stalks vary considerably in colour, so as to render the use of either name sufficiently correct. The roots of this as well as all the other varieties are strong, sticky, and much forked, being quite unfit for the same use as those described before.

The *Large White-stalked Beet* grows rather spreading in the top, with short broad leaf-stalks, very thick and very white. A good variety.

There is also another white variety, of a more upright growth, longer and thinner in the leaf-stalk, and a useful sort.

The *Red-stalked Beet* is similar in growth

to the last, with the leaf-stalks of a bright red, turning of a dingy colour when cooked.

The *Yellow-stalked Beet* is also like the two last, growing upright, and varying from deep orange to pale yellow in the colour of the leaf-stalks and veins of the leaves.

The *New Silver Beet* is a recent introduction from France, and the most worthy of cultivation of any. The leaves grow somewhat upright, forming a rather thick crown, of a light green colour, with white, or silvery veins and leaf-stalks. The latter are broad, fluted, from six to nine inches long, with a very thin skin, and are very brittle. Boiled and served up like sea-kale they are very sweet and tender, and form a useful side-dish.

The number of varieties might be easily increased from the French catalogues, but the above are enough for practical purposes.

In addition it may be mentioned, that a native weed, the common Sea-beet (*Beta maritima*) is also occasionally grown as a spinaceous plant. It is of common occurrence on the sandy and rocky sea coast, producing a tuft of thick, dark green, fleshy leaves from the crown of a strong root, and afterwards sending out a number of trailing branches, furnished with smaller but similar leaves. It is a perennial plant, producing abundance of seed on these branches every year. A superior variety is grown in some parts of Ireland, called the *Irish Sea-beet*, which has larger leaves, and not so deep in colour, and runs to seed rather sooner than the other. Although the difference between the two plants is not very great, yet this is far superior to the common in flavour.

In cultivating the Sea-beet, as the object in view is to produce quickly an abundance of large succulent leaves, it will be necessary to accommodate the plants with a deep rich soil, and, in dry weather, an abundant supply of water. These conditions complied with, little more is necessary than to keep the ground well stirred and clear of weeds. The seed should be sown every year, in March, as the old plants will hardly be worth keeping more than two seasons.

The cultivation of the second class of Beets, for their leaves and stalks, must also approximate to the last. In March or April, a rich deep piece of ground should be chosen, and the seed sown in rather shallow drills, from a foot to eighteen inches apart. If the weather prove very dry, the ground should be regularly watered, as otherwise the seed is apt to mould and rot. As the plants advance they must be kept clear of weeds, and be gradually thinned until they stand as wide apart in the rows as the rows are asunder. When arrived at their full growth, they may be partially stripped of their outer leaves three or four

times during the season, for spinach, but hardly so often if fine leaf-stalks are wanted. • If it is intended to keep any of the crop over the winter, either for a spring supply of leaves or to save seed, the crowns of the roots must be carefully protected from wet and frost. Of course an annual sowing is necessary to have this vegetable in its highest perfection. The best varieties to stand the winter are the common and the large white, but the best and most delicate eating is the new silver.

To grow the Beet-root in perfection, a similar rich deep soil should be chosen; if a sandy loam, so much the better, that being the favourite land for nearly all tuberous or fusiform rooted plants. Sow the seed at the same time as recommended for the others, and let the after management be the same. Before the frost sets in, say in October, proceed to lift the roots carefully, using a broad pronged fork for that purpose; twist, or break over the leaves, being careful not to bruise the crown, or any part of the root, if avoidable; and after letting the roots lay for a few hours, to partially dry, store them away in sand in a cold dry cellar, or similar place.

As all the varieties of Beet-root sport very much, particular care should be taken in selecting roots to save seed from. Those which combine a regular shape, with deep bright colour, and a small or moderate crown of leaves, should alone be selected for this purpose, and should be carefully ticketed and laid by until all frost is gone in the next spring, when they should be planted in a piece of good ground, and the stems securely staked as they advance in growth. A plentiful supply of seed will reward this slight trouble.

By far the best method of cooking Beet-roots is to bake them in the mould as they are dug up or stored; for if they are washed, or laid in water for any time, they absorb too much, and lose flavour thereby. Roasting them in wood ashes is still better; and if either of these methods be once tried, few would think of boiling them again. It renders the colour better, preserves the juice, and improves the flavour, rendering them much sweeter, and far more palatable.

THE BROAD BEAN.

THE Broad or Garden Bean (*Faba vulgaris*) is said to be a native of the East, but has been cultivated through so many ages as to render it very difficult to say to what country it is really indigenous. Its date of introduction into this country is also equally obscure, but it is, no doubt, very ancient, as is evidenced by its being a standard favourite in the gardens of the peasantry throughout the country. The following list will be found

to contain the best varieties in cultivation, and a more than sufficient number to supply the largest demand likely to be made for this article of diet.

The *Early Mazagan* grows from four to five feet high, with rather short pods, and about four beans in each, which are rather small, and of a white colour. The best for early sowing, as it is hardy, and a good bearer.

The *Green Long Pod* attains about the same height as the last, with long pods, containing about four beans, rather small and green coloured, both in a young and in a ripe state. Excellent as a bearer and for summer use.

The *Dutch Long Pod* attains the height of about five feet, with long and broad pods, containing five or six beans, which are large, broad, and white. Perhaps the best for general cultivation, being a good bearer, of good quality and rather late.

The *Windsor*, or Mumford, grows about four and a half feet high, producing a short, broad pod, generally containing about two very large beans of a white colour. The best for summer use, and remains longer in perfection than any other, except the next.

The *Green Windsor*, or Toker, grows about five feet high, with short, broad pods, containing about two large and very broad beans, which retain their green colour after ripening.

The *Long Pod* has stems from four to five feet high, producing long, not very broad pods, with four or five beans in each, which are large, broad, thin, and white. It is of excellent quality.

The *Dwarf Fan* has stems about two and a half feet high, with short, almost round pods, having about three small white beans in each. An abundant bearer, rather late, but of good quality.

The *Red Blossomed* grows about five feet high, with flowers varying in colour through many shades of red or pink. The pods are short, containing about three small beans. It is only fit for ornament.

The *White Blossomed* has stems about four feet high, with pure white blossoms. Pods rather long, containing about four small beans. Like the last, it is more ornamental than useful, being a very moderate bearer.

The *Violette* grows about four and a half feet high, with long and broad pods, containing three or four large broad beans, marked white and purple, when young, but of a dark red colour when ripe. Tolerably good, and rather later than the Mazagan in coming into use.

The *Dark Red* grows about four feet high, producing short broad pods, with two or three

beans in each, large and broad, of a light red colour when young, but changing to a dark red when ripe. Of good quality, and rather late, but not liked on account of its colour.

There are many varieties of field or Horse-beans, besides these, but they hardly come under consideration here. Some attempts have been made to unite or blend the qualities of the field bean and field pea, but with indifferent success. A very handsome field bean is Fullard's Golden-podded Bean.

Of these various sorts—all that are really distinguishable among the multiplicity of names which occur in seedsmen's lists—the best varieties are the early Mazagan, and the Green Long Pod for spring sowing, and the Windsor, Green Windsor, and Dutch Long Pod for summer use. Where this vegetable is in request they are generally sown in the latter end of November, or in December, but if not particularly wanted, a spring sowing in February or March will be quite early enough. They delight in a strong rich soil, and in such a situation allowance must be made for their extra growth. From four feet for the shorter sorts, to six or eight feet for the stronger ones, is not too much room to leave between the rows, as all the spare space may be cropped with lower growing vegetables, to which the shade afforded by the beans will generally be beneficial. For tall growing vegetables of this description the drills should always be drawn north and south, if possible, as then each side of the rows receives an equal degree of light, as well as whatever crops may be grown between the rows. The ground having been well dug, and manured, if not in good heart, proceed to draw drills as directed above, about three inches deep, then sow the beans at from three to six inches apart, according to the sort,—cover them up, and if the ground is light or dry, slightly tread them in, and rake the surface even, avoiding to tread the ground any more than is indispensable. But little more is requisite until they are in bloom, but to keep the ground clear of weeds, and to hoe pretty deep to keep it light and porous to the atmosphere. When the plants are in bloom about half way up, or sooner if the black aphid or fly makes its appearance, pinch off the top of each plant,—if the fly is on it, as low as they appear, and let the tops be carefully destroyed. Any other means of stopping this plague is, it is to be feared, ineffectual, and even this is only a partial relief. Independent of the insect, the stopping of the plant has a tendency to enable it to perfect the pods already set, and there is always enough on the stem by the time they are stopped to yield an excellent crop. If it is intended to save any seed, the best plan is to allow a portion of a row to stand over for that purpose, and not to be content

with the refuse left after picking for table, and after the birds have done with them. To prevent the ravages of the latter, they should be covered with nets, closely staked to the ground. When the pods are turning black, and before the lower ones begin to open and shed their seed, pull up the plants and dry them on mats, and when thoroughly dry, thresh or hand-shell the beans, and put them by in a dry room for future use. It is better to do this at once than to hang them up and let them go until bad weather allows time to do them more at leisure, as by that time they are very likely to be damaged or partly lost.

THE ONION.

THE Onion (*Allium Cepa*) appears to have been one of the earliest objects of the cultivator's care, and is still most highly prized in every part of the world. So involved in obscurity is its origin, that nothing satisfactory is known on that point, no botanist having undertaken to assign any one of the numerous wild species known as the parent of the cultivated varieties.

The varieties of Onions are rather numerous, and as is always the case under such circumstances, the number of names to be met with are sure to be proportionably multiplied. The following list will be found to contain the most of the varieties known in this country.

The *Silver-skinned Onion* is of middling size, flat in shape, and of a shining white colour. It is mild in flavour, and keeps tolerably, but is chiefly used for pickling, for which purpose its clear transparent flesh renders it very proper.

The *early Silver-skinned Onion* is similar to the first in form and colour, but the bulbs are smaller, and it is six weeks earlier. Also chiefly grown for pickling.

The *Oignon de Nocera Blanc très Hatif* is a French variety, introduced two or three years ago, and considered by far the best of all the sorts for pickling. Sown in similar soil, and at the same time as the other varieties, it was ripe and fit for use before any of the others were half grown, thus allowing time for another summer crop from the same ground. It is very small, firm, roundish, and very white. Its top is very small, of only one or two leaves. It is considered superior for pickling to another French variety, called *Oignon paille ou jaune*, being of a clearer and better colour.

The *Portugal Onion* is the variety so abundant in the shops, and can scarcely be depended on unless the seed is imported direct from Portugal. In shape it is flatly globular, with a rich brown skin, easily parting from the bulb when ripe. Being a large growing sort,

with long roots and plenty of top, it should be grown in deep, rich, light soil, and in such a situation will attain a very considerable size here. Its worst point is its being a bad keeper, although its mildness makes it a desirable kind.

The *Spanish Onion* is known by a great many names, being very extensively grown. It is known as the Reading and the Sandy Onion, and is very much grown near the above-named town. In shape it is flat, of a brownish colour outside, and it attains a large size. This is one of the very best for a general crop, although not a very late keeper. In flavour it is particularly mild.

The *Strasburg Onion* is generally of an oval shape, varying, however, considerably, and under its brown coat it is of a light red, tinged with green. The skin is rough, and the bulb is nearly buried below the surface. It keeps well, but is of strong flavour, and is sufficiently hardy to endure our ordinary winters.

The *Deptford Onion* is of a globular shape, medium size, colour pale brown, and skin smooth and thin. It is a hardy sort, mild in flavour, and keeps well.

The *Globe Onion* in shape very often approaches the Tripoli, but is generally of a handsome globular shape, large size, and of a pale brown colour, tinged with red. It is hardy, keeps well, and is mild flavoured.

The *Tripoli Onion* very much resembles in shape a soda-water bottle, and attains a larger size than any of the others. Indeed specimens have been imported from Barbary of enormous dimensions. In colour, under its outer skins, it is of a light red, tinged with green and brown. Its flesh is very soft, and it will not keep long, but its peculiar mildness makes it desirable.

James's Keeping Onion is of a pyramidal shape, and large size, and the colour of its inner skin is reddish. It is very hardy, keeps particularly well, but is of a strong flavour.

The *Pale-red Onion* varies a good deal in shape, but the bottom is usually very flat. It is of a pale red colour, but never attains a very large size. It ripens early, is firm in consistence, and keeps well, but is strong flavoured.

The *Yellow Onion* is of a globular shape, yellowish brown colour, and small size. It ripens early, is of firm texture, keeps well, but is strong flavoured. A very good pickling variety.

The *Blood-red Onion* is of a flat shape, and middling size, and of a deep red colour, sufficiently distinguishing it from all the others. It is very hardy, keeps remarkably well, and, on account of its strong flavour, is much grown for medicinal purposes.

The *Two-bladed Onion* is of a flattish shape, middling size, and green colour under its first coat. This variety is remarkable for the very little foliage it produces, the smaller bulbs seldom producing more than two leaves. It ripens early, with hard sound roots that keep well, but their flavour is strong.

The *Lisbon Onion* is generally of a globular shape, large size, of a clear white colour, and fine skin. A serviceable sort for some purposes, but too late in ripening to be used for a main crop.

The *Underground* or *Potato Onion* is a very prolific and useful sort. When ripe the skin is of a deepish brown colour; the flavour is rather strong, but not so much so as some of the others. Instead of seed, this sort is propagated by planting the bulbs, from which the offsets are so numerous as to yield a very heavy crop. It is a most valuable variety, and in some places supersedes every other, serving the whole season round, and being fit to take up by midsummer.

The *Tree*, or *Bulb-bearing Onion*, is a curious variety, believed to have originated from some other sort in Canada, where, the climate being too cold to produce seed, the plant made this effort of forming bulbs on the top of its stalk to perpetuate itself, and its progeny has retained the habit. This variety is occasionally met with in cottage gardens, but is more an object of curiosity than use, although the small bulbs are very good for pickling.

The *Welsh Onion* (*Allium fistulosum*), the *Ciboule* of the French, is a native of Siberia, where it is highly prized, and is perfectly hardy. In France they have two varieties, the white and the red. It is an herbaceous perennial, never forming bulbs, but is sown in summer to stand over the winter, and supply green onions in the spring; and though strong flavoured, it is so hardy as to make it valuable for that purpose, although seldom grown. In the spring a few plants should be left, which will produce abundance of seed. At that time of the year, from the appearance assumed by this, as well as the other Onions, when they begin to grow and acquire strength, they have obtained the name of *Scallions*. The old bulbs which have begun to grow are put out in the ground, and, together with others, autumn sown, and which have stood the winter, and grown large, are sent to market in considerable quantities, in spring and early summer, under this name. If ever a distinct sort was cultivated under this name, it appears to be entirely lost, unless the variety known in Wales as the *Hollow Leek* be taken as the true *Scallion*.

The Onion delights in a deep, free, sandy soil, well enriched with manure, attaining on

such soils a very considerable size even in this country. Where such a soil is not to be had in a natural state, trouble must be taken to bring it as nearly approaching such as possible. When rendered as light and friable as possible, about the end of March or beginning of April, proceed to sow the main crops. As crops are much more manageable when sown in drills than broadcast, draw shallow drills, about one foot apart, and scatter the seed rather thinly in them; then rake the ground level, and if the soil is light or very dry, run a light roller over the ground to firm the soil, and allow the seed to germinate quickly. For the convenience of weeding, the ground may be laid out in beds of four or five feet wide, and containing as many rows each. The crop must be strictly attended to and kept clear of weeds, and the plants gradually thinned out to from four to six inches apart in the rows. The thinnings are very useful for present consumption. The soil should be also stirred deeply at every hoeing; and if the weather prove very dry, and a portion be wanted particularly fine, they should be watered occasionally, giving a good soaking whenever it is done, and stirring the soil a day or two afterwards between the rows. Manured water has been applied with very great benefit, two or three times during the season, but it should not be used too often. When the tops of the plants begin to flag and wither, and the bulbs are evidently ripening, advantage should be taken of fine weather, and the crops should be carefully pulled, avoiding to bruise the bulbs as much as possible. They should be left on the ground for a few days to dry, and then be carefully put away in a dry airy place, where they can be occasionally looked over, and any decaying ones removed. For this main crop the best varieties will be found to be the Spanish, the Strasburg, the Globe, and James's Keeping. For small gardens, the first and either of the others will be sufficient. If a still greater variety be wanted, the Tripoli is desirable, as a mild and useful sort, until Christmas.

In order to have a supply of small green Onions in the spring, it is customary to sow a small bed or two in rich lightish soil, about the beginning of August. For the convenience of weeding, they should also be sown in drills, and if the season is dry, they should be regularly watered until up and well established. Of course they must be kept perfectly free from weeds; and they may be very considerably protected from frost and cold cutting winds by sticking a quantity of fern, or small spray of trees, thickly between the rows, when the hard weather approaches. The Strasburg, Deptford, and Lisbon varieties are the best to sow for this crop, although any of the others

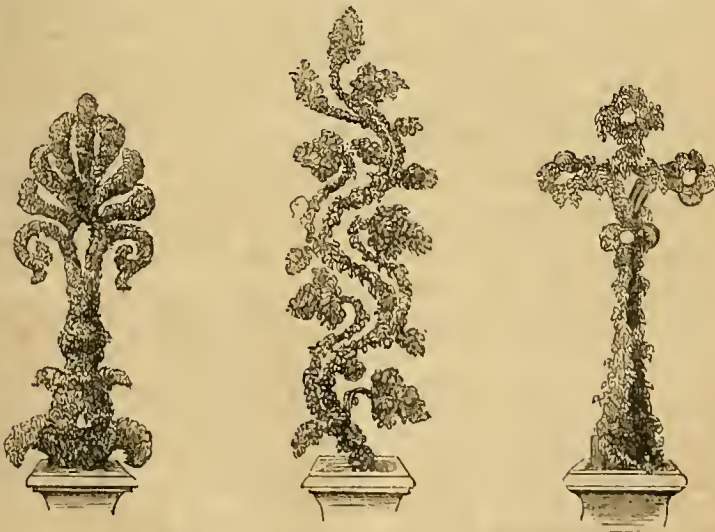
will stand mild winters. Where a large quantity of green onions are required for salads and other purposes, small quantities should be sown in nearly every month of the year, from the above period, in order to be enabled to keep up a supply of young and mild plants.

To grow a crop fit for pickling, the seed should be sown, on rather poor ground, at the same time as for the general crop; and as the bulbs are wanted small, the seed should be sown broadcast and very thick. Of course no weeds must be suffered to interfere with the plants. The crop will be ripe long before the main supply, and the ground may be applied to other purposes. The best varieties for this purpose are indicated in the above list.

Where it is a point to obtain very large onions, a very good plan is to sow seed of the Portugal, Lisbon Two-bladed, or some other sort—although the above will be found the best—in May, in poor soil, and letting them grow very thick, so that when ripe the bulbs should not exceed the size of nuts. These small bulbs must be carefully kept in a dry place until the following March; when, as soon as the weather permits, they should be planted in a warm and rich piece of ground, placing them in rows about nine inches or a foot asunder, and about six inches apart in the rows. They should be slightly covered with leaf-mould, or similar light compost, and must be well watered in dry weather, keeping the weeds down and the earth well stirred among the plants. Perhaps the largest onions pro-

duceable in England are to be grown in this way. Very large bulbs may also be procured by sowing a little seed in pots or boxes in a warm frame in February, and transplanting them into similarly prepared ground, being very careful not to close the earth about the stem of the plant, but only on the fibres; of course they must be strictly attended to in watering.

The culture of the Underground Onion is very simple, and as the return is very great it is a variety particularly suited for small gardens. In January, select a piece of prepared ground, as previously recommended, and mark it off into beds, then mark the beds in rows about ten inches apart, and plant the bulbs on the surface of the soil, just lightly pressing them down to fix them, and then cover them about an inch or so above their crowns with leaf-mould, and make up the beds, leaving all clean and neat. They need but little more attention than to keep them clear of weeds; for whether moulded up like potatoes, as is done by some, or basins be scooped out round them, as recommended by others, the result will be an abundant crop on most soils. About midsummer, or shortly afterwards, they may be pulled and allowed to ripen in the sun for a few days, and then stored away for use. A good plan, where room is scarce, is to have them tied up in ropes, as onions are often exposed for sale in London, and they then occupy very little room, and will keep well until February or March, if placed in a dry cold situation.



FANCY TRELLISES FOR CLIMBERS.

WE have before entered upon the subject of plant supporters of a more natural and tasty shape than the unmeaning things which have been so long in use by even good gardeners.

Plants of great interest have been displayed upon round shields, as uncouth as a round pillar-and-claw table turned up, displaying nothing approaching to nature, or art, about them.

We cannot help fancying that objects such as we see in nature are far better imitated than things merely mechanical. Nobody ever saw plants growing to cover a round table turned sideways; but ivy may be seen clinging to pillars, to ruins, to gate-posts, and the top ornaments of columns; it may be found growing over the arches of doors and windows, up the old stumps of trees, and in sundry other situations peculiar to ancient out-door structures; and it is upon this principle we gave a few sketches before, and add a few others now. There is, it is true, a great field open for the exercise of taste, for the forms are endless. It requires some skill to keep the form of the device; for plants, if allowed to ramble, would grow over in a solid mass, and the beauty would be lost. Whether, therefore, we look upon these subjects as desirable for their general, and natural, and elegant appearance, or as trying the skill of the gardener, they are equally to be recommended, and the more the designer exercises his ingenuity the better.

SMALL SALADS.

CRESS.

THE common small cress (*Lepidium sativum*) is a native of Persia, and is stated to have been introduced to this country in 1548. When allowed to grow to its full dimensions it is a smooth, glaucous, slender plant, seldom much exceeding two feet in height, producing great quantities of small white flowers, which are succeeded by small roundish flattened seed-vessels, containing two seeds each. Its use as a salad is well known, and it is highly appreciated for its pleasant biting flavour.

Besides the common form, two varieties of this plant are cultivated. The *Curled Cress*, having leaves very much crisped and curled; and the *Broad-leaved Cress*, having broader and flatter leaves than the common. For use in a young state any of the varieties may be grown; but where the true leaves are wanted, either as a salad, or for garnishing, the curled should be preferred.

The cultivation of the cress is too simple to require many words. When grown in heat it should not be covered with earth, but the place where it is sown, whether in boxes, or on the earth in the house, should be made tolerably firm, the seed sown very thick, and a board, or better a fold or two of canvass or cloth laid over it, until the seed has fairly sprouted, when the covering should be carefully removed. Never allow it to become too dry, or the crop will be spoiled, especially in heat. Where a regular supply is required, a sufficient sowing should be made every week or ten days at the farthest, in heat at first,

under a warm wall as the spring advances, and under a north wall in the summer.

GOLDEN CRESS.

The *Golden Cress* was introduced from France about 1825, or a little earlier, where it was considered as a variety of the common, but it differs so much from that in seed and habit, that it is most probably a distinct species. The leaves are thinner in texture than in the others, of a flat oblong shape, and of an agreeable delicate yellowish green colour, whence its name. It should be sown rather thickly in shallow drills, if as early as March, in a sheltered spot, and kept clear of weeds by hand-weeding, until its leaves are about an inch and a half or two inches long, when it is fit for use, and may be cut over two or three times before it runs to seed. When in flower it is about eighteen inches high, and produces abundance of seed. It has a very delicate flavour, and is highly deserving of cultivation.

MUSTARD.

The sort of mustard generally grown for cutting young as a small salad, is the white, (*Sinapis alba*), a wild plant found in corn-fields and similar places in various parts of England. Its treatment is the same as the common cress, being cut to mix with that when about two inches high, before its rough leaves appear, when it becomes unfit for use.

The *Cut-leaved Mustard* is a variety introduced into France from China a few years ago, and appears worthy of attention. The leaves are small and smooth, and cut almost the mid-rib. It is of quick growth, and is good substitute for cresses when used before gets too old; the true leaves being used, and not the seed leaves, as in the common mustard.

RAPE.

The young plants of Rape (*Brassica Napus*) are also grown in a similar way, and for the same purpose as the last. This is also a British plant, being found in similar situations as the last, and the treatment is also identical.

RADISH.

The seeds of some of the varieties of the Radish (*Raphanus sativus*, a native of China, said to have been introduced in 1548) are also grown as a small salad, the treatment being as for the others, the principal point being to sow thick, grow quick, and get the plants about two inches high, so as to cut them without making them dirty.

SMALL SALAD LETTUCES.

The *Endive-leaved Lettuce* (*Lactuca inty-bacca*) is a species with leaves very like those of the Curled Endive, which are lyrate, lobed, and sharply toothed, and of a pale green colour. It is not so useful a sort as the next, as it runs

to seed much sooner. The young leaves should be cut when three or four inches long.

The *Spinach Lettuce* (*Lactuca quercina*) is so named from its leaves being something like those of the oak, about six inches long, of a pale green colour, and mild flavour. It never forms a heart, and does not run to seed quite so soon as the first. It is fit for use when the lower leaves are five or six inches long.

The *Salad Cabbage Lettuce* appears to be a variety of the common White Cabbage Lettuce, forming a small loose heart, and soon running to seed. The leaves are roundish, about four inches long, and of a pale green colour. It is in use after the above sorts, and like them, must be cut young.

Other varieties are grown in the French gardens, where so many salad plants are cultivated. This description of lettuce is used as an ingredient in salads, being cut when young, and mixed with other plants. Their cultivation is simple. The seed should be sown in drills, in rich moist ground, commencing early in spring, and continuing successional sowings through the summer, under a north wall, or in other cool places. The seed should be sown thick in the drills, and the plants will generally afford two crops, if not cropped too close at the first cutting.

GARDEN PICRIDIMUM.

This is the *Picridium vulgare*, a native of the south of Europe, and long cultivated in Italy for its young leaves, which are eaten mixed in the salads. The plants grow quickly, producing plenty of leaves, of a pleasant flavour. Sown in spring, the plant flowers in June, but the stalks should be kept cut off, when it will produce leaves fit for use all through the summer. It is a perennial plant, but the leaves are far preferable from one-year-old plants. Its treatment is precisely similar to that of the above lettuces.

CORN SALADS.

Several species of *Valerianella* are used as small salads on the continent, although almost neglected here.

The *Common Corn Salad*, or Lamb's Lettuce (*Valerianella olitoria*), is a native of Britain, in corn-fields and cultivated ground. It is a slender growing plant, of a pale green colour, and producing little bunches of pale bluish flowers.

The *Common Corn Salad*, grown in France under the name of *Mache*, is the *Valerianella locusta*. The leaves are bright green, on moderately long foot-stalks.

The *Italian Corn Salad* (*Valerianella eriocarpa*) is stated to be superior to the last in coming sooner into use, and possessing a milder flavour. The leaves are oblong, entire, on longish foot-stalks, and of a yellowish green

colour. Where known, this plant is much valued cooked as spinach, in which way it is very good.

The *Algiers Corn Salad* (*Valerianella cornucopiae*) is a pretty plant in the flower garden, and affords a good supply of leaves as a salad, being better flavoured than the common sort, producing abundance of leaves, and speedily furnishing other crops after being cut. The seed should be sown in the spring, as soon as the frosts are over, and the leaves will be ready for use in June: the plants will continue furnishing leaves until destroyed by cold.

The cultivation of corn salads is very similar to that of the salad lettuces. Of course, where large and succulent vegetables are wanted during the heat of summer, rich and moist ground must be prepared, which should be shaded by a wall, fence, or hurdles, but not by trees. In such a situation, with proper attention to water in dry weather, these plants will flourish, and produce abundance of leaves. The great object is to attain quick growth, so that the plants shall be as tender as possible, and this can only be secured by attention to the foregoing directions.



THE SCOTCH PINE.

In civil architecture, the Scotch pine is justly considered the most important tree that we have. Its recent and extended uses in the construction of railways, and in wood pavement, are additional reasons why this hardy mountaineer should have a place on every piece of waste land not adapted for the growth of more select timber trees. Its rise and fall,

then, may be traced, with profit to those who are ignorant of the best way of treating this common though useful individual.

It is universally raised from seeds: the cones containing the seeds are generally ripe in the month of January; but it is more correct to state that they are not fit to be gathered until whitened by frost, for until this takes place they are not only not ripe, but it is impossible with any moderate degree of heat to open them and get at the seeds. The wholesale dealers, who supply the London seedsmen, live in the neighbourhood of extensive forests in the north of Scotland; and their plan is to lay the cones about twelve inches thick upon a kiln, (not of brick, but of wood, for the former would roast the seeds,) for the space of twelve hours, turning them twice during the day, and subjecting them during that time to heat equal to 110 degs. Fahr. They are then sifted, and, in order to detach the wings which adhere to the seeds, spread upon an uneven clay floor to the depth of six inches, and rubbed with the feet. After undergoing the usual process of cleaning, they should be kept in a perfectly dry place till the time of sowing.

The operation of sowing is performed in the end of April, or beginning of May, when the spring frosts are over. The soil selected should be light and friable, and it is very important that the ground should be dug deep, and finely raked. The beds in which they are sown are generally made four feet wide, with alleys between of one foot in width. The seeds should be sown so as to lie about a quarter of an inch apart from each other, and the covering should be to the depth of an eighth of an inch. In these beds the plants should remain for two years, when they will be fit to be finally removed.

Where will this tree not grow? It is at home on sand, gravel, clay, peat, and chalk, though on the last mentioned soil it becomes an indifferent timber tree. It stands nearer to the sea than almost any other, and it is not scrupulous either as to heat or cold. In short, so long as we have the Scotch pine, no proprietor can say that he has a tract of land too barren or exposed, or unfit in quality, to bear timber trees.

The time of planting is the autumn or spring; and the mode of planting is regulated entirely by the nature of the land to be planted. Where the surface is covered with luxuriant heath, it should be cleared away by burning it a year or two before it is to be planted; but in all cases where the heath is dwarf, and does not entirely cover the soil, it is better that it should remain to shelter the young plants. Furze and broom should be stubbed up, as well as all undergrowths, which are apt to choke the young plants. When plant-

ing the pine in land of this description, it is not necessary to make *pits* for their reception, but merely a notch with a small spade, technically a *planting-iron*, which is easily worked with one hand, whilst the other is employed in inserting the plant. In all cases, however, where the ground is covered with thick herbage, small pits should be made; and then plants of a larger size may be used with every prospect of success. Pines are generally planted about four or five feet apart from each other,—not that they are to remain long in this crowded state, but for the purpose of insuring a sufficient crop when they come to be thinned.

The *pruning* of this tree should be regulated by the thinning. No knife should be used in removing a green and flourishing branch; for no tree in the wide forest is so impatient under the infliction. Let each tree, then, have a surface of leaves sufficient to draw up and elaborate the sap, and let no branch be cut away until it has become (if we may so express it) a matter of indifference to the tree whether it be removed or not. Under such circumstances, the skilful forester will, for the sake of the timber he is rearing, cut off close to the stem all such branches as have become decayed and are inactive or useless agents. In those extensive forests in the north of Scotland, where we have spent many a day in collecting the seeds of this tree, no pruning is practised except such as Nature performs by excluding the air from the side branches, a process which in our opinion is infinitely superior to the plan of detaching healthy and vigorous branches from the trunk. But let it be remembered, and we state it as an incontrovertible fact, that the timber so produced is not fit to be compared with such as has had free exposure to the light and air. On this head, therefore, our advice is to let the tree be close enough to one another to discourage vigorous growth amongst the *lowest* branches, which, when detached, will admit air sufficient to circulate around the trunk in order to render the timber hard and durable.

Our office is to urge the adoption of this tree in every respect; but at the same time it may be well to observe, that in ornamental grounds it must be used very sparingly by the landscape-gardener. It has a wild and solitary character, and it is only in the far-off scenes of a landscape where it can be appropriately employed. The felling of this tree will be entirely regulated by the description of soil on which it grows. The poorest land is that which has a thin layer of peat on an impenetrable crust of iron stone, through which the rain cannot penetrate. On this land the Scotch pine will be at its best in the course of twenty-five or thirty years. It will then begin to be

covered with lichen, a sure sign that it will not increase further in bulk. It should then, of course, be cut down. On lands which are not much exposed, and where the subsoil is free, the Scotch pine will attain maturity in about fifty years; and on its proper habitation, the hills, it will continue increasing till about seventy or eighty years of age. It is impossible, however, to fix a scale applicable to all the situations and soils which it may happen to affect, and the planter must himself exercise his judgment both as to the state of the tree, as well as to the purposes for which the timber may be required. For flooring, and house-carpentry in general, mature trees are to be preferred; for scaffolding, trees of forty years of age, grown on "middling good soil," are better than any others. The best season of the year for felling is from October till March, when the juices are at rest.

THE RHUBARB.

UNDER the common designation of Rhubarb, several distinct species have got into cultivation, and at the present day no doubt they are variously mixed together in the varieties which are every year raised from seed, such being the common and natural method pursued by the great growers of this vegetable for the London markets. The enormous quantities of this one article alone frequently exhibited in Covent Garden on one morning, independent of the other markets, would, of itself, give a stranger a good idea of the enormous population it has to be distributed amongst, and which have to be daily supplied, not alone with a comparative luxury brought to market in numbers of vans drawn by four and six horses each, but also with the commonest necessities of life.

The number of species of rhubarb known is upwards of twenty, and at least sixteen are introduced to this country. The head quarters of the genus seems to be on the table lands of the central parts of Asia, where they appear to affect the rocky declivities of the hills, growing on the borders of woods and in bushy places. One species, *Rheum austriacum*, penetrates into eastern Europe, whilst *R. undulatum* is found in China, they thus appearing to follow the ranges of mountains which occupy the higher parts of that enormous continent.

It has long been a contested point as to the species which produced the medicinal root, and although it was long settled that the Turkey and the Chinese must be the produce of different plants, it was not so easy to decide which were the plants. But there can be little doubt that the collectors of the roots are more liable to take every good root they see,

than to stop to look as to the peculiar sort it might be; for it can hardly be expected that any one of the species grows so exclusively alone as to be always selected for medical purposes. This will apply whether the collectors are Turks, Bucharians, or Mongols.

Rheum Rhaponticum appears to be a native of western Asia, and to have been known in this country since 1573. It has large cordate, pointed leaves, much waved on the edges, the expansion of the leaves being elevated between the ribs and veins. Leaf-stalks, with a broad but shallow furrow, rounded on the edges, on the upper side, and of a bright red colour. The flavour of the leaf-stalk is sharp, acid, and pleasant, with less of the medicinal flavour than almost any of the others. This is supposed to be one of the sorts collected for the Turkey market; and is also very extensively cultivated in England.

Rheum hybridum is also a native of Asia, and was introduced in 1573. Leaves large, cordate, blunt or rounded at the end, in a young state wrinkled between the ribs. Leaf-stalks with a broad shallow furrow above, and of a dark red colour. The flavour is more medicinal, and not so pleasantly acid as the above. This appears to be the sort the giant varieties are raised from; and it is esteemed more succulent than the first by some.

Rheum palmatum is a native of Bucharia, introduced in 1763, and is by many considered as furnishing the Russian rhubarb of commerce. It is easily distinguished from all the others by its palmate leaves, acutely toothed or jagged, and by its round leaf-stalks, of a greenish colour, thickly spotted with small red spots. It has a very slightly acid, rather medicinal flavour, but appears to be more destitute of flavour in a young state than any of the others.

Rheum undulatum is a native of China, and was introduced in 1734. It has cordate leaves, lengthened into a point, and much waved at the edges. The leaf-stalk has a very slight furrow above, and is of a red colour about half way up. It is not so high flavoured as the first sort, and has a slightly medicinal taste. It appears to be decidedly the earliest species, and on that account worthy of attention.

Rheum caspicum is a native of the Russian provinces near the Caspian sea, and was introduced in 1817. The leaves are cordate, wrinkled, and undulated at the edges, and it approaches the last in appearance. Leaf-stalks broadly furrowed above, of a dull red colour, and very coarse in the flesh, which possesses little acidity, and has a strong medicinal flavour.

Rheum compactum is a native of Tartary, and was introduced in 1758. Leaves cordate,

wrinkled. Leaf-stalks deeply furrowed in front, of a bright red colour. This appears to be one of the latest in starting into leaf.

It is hardly possible to give a list of the varieties in cultivation, as they may be, and of course are, varying every year, the great growers continually raising their fresh supplies from seed. They may, however, be distinguished as the red-stalked varieties, which are generally of smaller growth than the others, or common or green-stalked varieties. Those with red stalks are also preferred for forcing, and for small gardens, although their produce is not so great. They appear to be chiefly varieties of *Rheum undulatum*, and perhaps some of *R. Rhaponticum*, whilst the common and giant varieties have the most of them been procured from seed of *R. hybridum*. Among the scarlet-fleshed sorts, *Buck's Scarlet* has long been highly prized for early forcing, and lately the *Early Tobolsk* has also been much grown. Among the common sorts, the giant varieties raised by Myatt of Deptford have been extensively cultivated, especially for the markets, their enormous produce in good land rendering them highly profitable.

Rhubarb flourishes best in a deep free loam, well enriched with manure. In order to raise a stock of plants, select in the beginning of April a warm border, and bring it to the finest tilth, by repeated diggings. On this sow the seeds, raking them in slightly, and watering if the weather prove dry. But little more is necessary the first year than to thin them out so that they stand nearly clear of one another, and to keep the bed clear of weeds. Occasional soakings of water, if a dry season, will prove highly beneficial. In the next spring proceed to prepare the land for their final planting out. If they are to be planted in a quarter by themselves, let it be well trenched and manured, and having properly levelled it, in March the plants should be put out. If a giant sort, the rows should be at least six feet apart, and the plants nearly as distant in the rows. For the smaller sorts three or four feet apart every way will be found sufficient. In lifting the roots from the seed bed, great care should be used, so that they sustain as little damage by breakage or lengthened exposure to the atmosphere as possible. The best way is to open a trench at one end of the seed bed, and carefully fork them out, selecting the strongest for planting, and forcing the others, or making reserve beds of them. When planted out, keep the ground well stirred and clear of weeds, and water liberally in dry weather. Of course, to a strong growing plant like this, liquid manure occasionally would be a great help. In the succeeding winter the ground should receive a good coat of manure, which should be deeply

dug in, breaking the soil well round the plants. The next spring the plants will afford a tolerable supply of leaves, but they should not be stripped off too often, as it materially weakens the plants. Such a plantation will last many years, by pursuing the above routine of cultivation, and not distressing the plants too much by taking too many of their leaves. The market-gardeners seldom keep the plants many years, as they strip them so close as soon to weaken them, and they therefore sow, plant, and destroy a certain quantity every season.

If, however, it be wished to perpetuate any particular variety, as *Buck's Scarlet* for instance, a different plan must be pursued. In spring take up the old roots, and separate them into as many pieces as convenient, leaving at least one good bud to each piece. Plant these in good soil, and mind they do not suffer for want of water. By the next season they will form strong plants, fit for forcing where they stand, or for potting up for that purpose. In this way any favourite variety may be increased, and kept true, which would not be the case if they were raised from seed.

Rhubarb may be forced in many different ways. Where an old piece is about to be destroyed, the roots may be covered with pots used for forcing sea-kale, and a gentle warmth applied by linings of dung or leaves. From 45 to 55 degs. will generally be found heat enough to bring it forward. In this situation the forcing may be begun as early in the winter as desirable, the stalks being generally ready for use in about six weeks, if the heat be moderate. Where a mushroom house or early vinery is available, rhubarb may be forced with less labour and litter than by the above method. Late in the autumn, when the plants are quite at rest, let a sufficient supply of roots be dug up and potted in pots or boxes. Let them be set under a north wall, and watered, to settle the mould about them. From this they can be moved into heat as wanted. A box three feet long, twenty inches wide, and of sufficient depth to take the roots without breaking them, will yield a moderate supply for a small family, one such box being introduced to heat about every three weeks. A light soil should be used in the boxes; some indeed preferring old tan. If the sort be scarce, the plants after forcing should be sheltered from bad weather until April, when they may be turned out in light rich ground, and will be fit for forcing again after a season's growth.

Another method has been recommended, that of using roots only one year old, potting them up in a similar manner, and forcing them in any available space; if in a vinery or where there is light, then covering the pot containing

the roots with another of the same size, so as to blanch the stalks thoroughly. Sixty pots, each ten inches over, and from five to eight roots in each according to size, will supply a moderate sized family, if forced in succession.

If seed is not wanted, the flower-stem should be taken out of every plant as soon as it begins to rise in the spring, so that it may not exhaust the root. The flower-heads if gathered just before they burst the bract which shields them, are said to afford a very delicate vegetable, if cooked as brocoli, and it has been lately recommended under the name of Rha-flower.

BRITISH PLANTS.

THE GENUS CARUM.

Character.—Fruit compressed, oblong; carpels with five filiform ridges, and single vittæ* in the interstices; *stylopodium*† depressed; *calyx* obsolete; petals obcordate, with a narrow, acute, inflexed point. There are two British species.



Carum Carui.

C. Carui, Linnæus.—Caraway. Root fusiform; stem branched; leaves bipinnate; general involucre either absent or consisting of one leaf; *partial involucre* always wanting. A biennial plant, growing from one to two

feet high, with a tapering root, and erect, angular, branched stem; the lower leaves are nearly a span long, and twice pinnate; the foot-stalk much dilated at the base, and the leaflets cut into linear segments; the stem-leaves are smaller; the umbels of flowers are numerous, both terminal and lateral, and are produced in June; the general umbels are often without involucres, the partial ones always so; the flowers are white, of five obovate, notched petals, with a small inflexed point; the fruit is aromatic. Naturalized in some parts of Great Britain, where it is found in meadows and pastures. The seeds of this plant are the caraway seeds of the shops; they have an aromatic smell, and a warm pungent taste. They are reckoned among the four greater hot seeds, as they were formerly termed, and are frequently employed as a stomachic and carminative; they are also, as is well known, employed in culinary arrangements.

C. verticillatum, Koch.—Whorled Caraway. Root fascicled; stem slender; leaves pinnate, with leaflets divided to the base into capillary spreading segments; *general and partial involucres* of many leaves, small. A herbaceous perennial, growing from one to two feet high, with slender, smooth, slightly branched stems, and bearing the leaves mostly at the base, on long footstalks, sheathing at the base; the segments of the leaflets spread so as to appear whorled, and quite surround the stalk. The umbels of flowers are terminal, produced in July and August; the flowers are small and white. Found rarely in England, in Wales, and in Ireland, and very abundantly in the west of Scotland, in moist hilly pasturages, especially near the sea. It is the *Sison verticillatum* of Linnæus, and *Sium verticillatum* of Lamarck.

These plants are of very easy cultivation, the latter requiring only the ordinary management of herbaceous plants; the former that of biennial culinary crops.

THE GENUS PYRETHRUM.

Character.—Fruit angular, crowned with a membranaceous border; receptacle naked; involucre hemispherical, or nearly flat; scales imbricated, membranaceous at their margins. Three species are natives of Britain.

P. Parthenium, Smith.—Common Feverfew. Leaves stalked, bipinnate; segments ovate, or oblong, pinnatifid; lobes cut; heads corymbose; involueral scales linear obtuse; fruit crowned with a short jagged membrane. A herbaceous perennial, growing two feet high, with erect branched stems, terminated by small corymbose heads of flowers; the leaves are flat and hoary looking; the uppermost leaflets confluent; the flower-heads are small, produced in July, with a very short white ray

* Clavate vessels of oil, found in the coat of the fruit of umbelliferous plants.

† This word is not much used; it indicates a small body attached to the summit of the ovary in this class of plants.

and yellow disk. Found in waste places; not very common. It is the *Chrysanthemum Parthenium* of some, and *Matricaria Parthenium* of Linnæus. There is a variety in which the disk is occupied by large white tubular florets,



Pyrethrum Parthenium.

and in this state it is a handsome herbaceous plant. Feverfew is bitter and strong scented; and is reckoned to be tonic, stimulating, and anti-hysterical (*Smith*). It was once esteemed a popular remedy in cases of ague. The odour is said to be exceedingly disagreeable to bees; and that these insects may be easily kept at a distance by carrying a handful of the flower heads (*Burnett*). It is also recommended as a warm stimulating bitter. All that bitters and carminatives can do may be expected from this plant; but chamomile flowers, which have the same properties, are more powerful (*Duncan*).

P. inodorum, *Smith*.—Corn Feverfew, or Scentless Mayweed. *Leaves sessile, pinnatifid in numerous capillary pointed segments; heads solitary; involucre scales lanceolate obtuse; fruit rugose, with two round glandular dots on the external face, just below the elevated outer border.* An annual, growing a foot and a half high, with an erect angular branching stem; leaves with narrow elongated segments, furrowed beneath, and solitary large flower heads terminating the branches; the ray large, white; disk yellow. It flowers from July to September, and is found commonly by waysides, and in fields and waste places. It is called *Matricaria inodora*, and *Chrysanthemum inodorum*.

P. maritimum, *Smith*.—Sea Feverfew. *Leaves sessile, bipinnate; segments fleshy, linear, entire, bluish, convex above, keeled*

beneath; heads solitary; involucre scales lanceolate obtuse; fruit slightly rugose, with two elongated glandular spots on the external face, just below the lobed elevated border. A herbaceous perennial, with the stems usually procumbent, and branching; and leaves with short crowded segments. The flower-heads resemble *P. inodorum*, and are produced in July and August. This plant is found on the sea coast in many places, especially in Scotland.

The two latter of these plants are to be regarded as weeds. *P. Parthenium* is a medicinal plant, and when cultivated as such, requires only the common treatment of hardy herbaceous plants.

THE GENUS MENTHA.

Character.—*Calyx* equal, five-toothed. *Corolla* nearly regular, four cleft, tube very short. *Stamens* four, distant; anther cells parallel; filaments naked. There are several British species.

* Throat of calyx naked.

M. rotundifolia, *Linnæus*.—Round-leaved Mint. Stem erect; *leaves elliptic obtuse, sessile, crenate-serrated, shaggy beneath; spikes linear-cylindrical, interrupted; bracts lanceolate.* A herbaceous perennial, growing two or three feet high, with fibrous roots, spreading suckers, square hairy stems, opposite sessile rugose leaves, and the flowers in interrupted, whorled spikes; the flowers are downy, pale pink, and borne in August and September. Found in waste moist places, not unfrequently in many parts of England, more rarely in Scotland and Ireland. This is the *Mentha sylvestris* of *Sole*. There are some varieties:—*velutina* has large cordate, elliptical, clasping, apiculated, silky leaves; *crispa* (*M. crispa*, *Linnæus*) has subsessile, deeply cut and crisped leaves, and the flowers very slightly downy externally. This plant, from its strong aromatic odour, has been admitted to some gardens; by cultivation, the leaves sometimes become slightly variegated. *M. rotundifolia* has been in some repute as a stomachic and emmenagogue.

M. sylvestris, *Linnæus*.—Horse Mint. Stem erect; *leaves ovate, or lanceolate-acute, sessile, unequally serrate, hoary beneath; spikes linear-cylindrical, scarcely interrupted; bracts subulate.* A herbaceous perennial, growing two or three feet high, with fibrous roots, spreading suckers, obtusely angular, hoary, branched stems, with the pubescence turned downwards, opposite, usually sessile, acutely pointed leaves, variable in form, and terminal slender spikes of flowers, interrupted at the base: the calyx is woolly, and the corolla downy, pale pink, produced in August and September. It is found in marshy ground, in damp places, not unfrequently. The varieties include:—*longi-*

folia (*M. longifolia*, Hudson), with lanceolate acute leaves; *Brittingeri* (*M. Brittingeri*, Opitz), with ovate, lanceolate, whitish-green leaves; *villosa* (*M. villosa*, Hudson), with ovate acute leaves; *memorosa* (*M. memorosa*, Willdenow; *M. alopecuroides*, Hull; *M. rotundifolia*, Sole), with broad obtuse elliptic leaves. These varieties are not very distinct. The plant has a strong peculiar smell.



Mentha viridis.

M. viridis, Linnæus.—Spear Mint. Stem erect; leaves glabrous, sessile, lanceolate acute, serrate; spikes lax, cylindrical; bracts awl-shaped. A herbaceous perennial, growing two or three feet high, with fibrous roots, creeping root-stems, or suckers, square acutely-angled smooth stems, and acutely lance-shaped leaves, unequally serrated, and glandular below; the flowers are in whorls, forming a loose cylindrical spike, purplish lilac, and glabrous, and produced in August and September. Found in marshy places in many parts of England. There is a variety called *crispa*, with elegantly curled leaves. This species is the common cultivated Mint; the leaves have a strong, peculiar, and pleasant odour, and a warm, somewhat rough and bitter taste. There are several preparations kept in shops, of which the essential oil, and a distilled and simple water are the most common; a conserve also is made from it. The best preparations are a strong infusion, made from the dry leaves, in water (which is much superior to one from the green-herb), or rather, a tincture or extract prepared with rectified spirit; these possess the whole virtues of the plant, while the essential oil contains only the aromatic part, the expressed juice only the astringency and bitterness, with the mucilaginous substance common to all vegetables. (Duncan.)

M. pratensis, Sole.—Meadow Mint. Stem erect; leaves nearly sessile, ovate-lanceolate, acute, serrated; floral leaves similar, the smaller ones longer than the whorls; whorls all distant, subglobose; pedicles glabrous; calyx bell-shaped, with hairy teeth. A herbaceous perennial, growing two feet high, with fibrous roots, widely spreading suckers, obtusely angular, much branched stems with reflexed hairs, spreading leaves on short foot-stalks, clothed with short down, and scattered over with small glandular dots; the flowers are produced in August, in axillary subglobose whorls; the calyx glandular and having hairy teeth, the corolla small and pink. Found rarely in marshy places in England. This plant is the *M. gentilis*, Sole; *M. rubra*, Fries; and *M. gracilis*, Smith.

M. piperita, Linnæus.—Pepper Mint. Stem erect; leaves stalked, ovate lanceolate, or oblong, upper ones smaller, bracts lanceolate; spikes lax, short, obtuse, interrupted below; calyx tubular, glabrous below, with lanceolate awl-shaped teeth. A herbaceous perennial, growing two or three feet high, with fibrous roots, creeping suckers, and square roughish stems; the leaves are opposite, all stalked, strongly serrated, and as well as the stems, are nearly glabrous, generally hairy on



Mentha piperita.

the nerves beneath; the flowers are in whorled terminal spikes, the whorls more or less distant, produced in August and September; the calyx is glandular, and the corolla of a purplish lilac colour. Rare in wet places in various parts of England, Ireland, and Scotland. It is also called *M. glabrata*, Vahl; *M. balsamea*, Willdenow; *M. Pimentum*, Nees ab Esenbeck. A variety called *sylvestris* has the leaves ovate

rounded, and almost heart-shaped below; and there are some others of less importance. Peppermint is a warm aromatic stimulant, and the most pleasant of all the mints. The leaves and upper part of the stems are the officinal parts; they have a more penetrating smell than any of the others, and a much warmer pungent glowing taste, sinking, as it were, into the tongue. Water extracts the whole of the pungency by infusion, and elevates it in distillation. The officinal preparations are an essential oil, a simple water, and a spirit. The volatile oil is sometimes taken as an antispasmodic; and it is what gives their flavour to peppermint lozenges.

M. aquatica, Linnæus. — Water Mint. Stem erect; leaves stalked, ovate, rounded below, serrate, *uppermost ones* like bracts, and *shorter than the whorls*; *whorls few, subglobose, capitate, the uppermost terminal*; calyx tubular, with triangular, awl-shaped teeth, hairy. A herbaceous perennial, growing two or three feet high, with fibrous roots, long creeping suckers, square, mostly hairy stems, and ovate, or elliptic-ovate leaves, rounded or tapering at the base; the flowers are usually in whorls, but the uppermost head is always terminal; they are produced in August and September; the calyx is glandular, and clothed with hairs pointing upwards; the corolla purplish, hairy on the outside. Found commonly on the banks of rivers, and in watery places. *M. citrata*, Ehrhart (*M. odorata*, Sole), the Bergamot Mint, is regarded as being only a glabrous variety of this plant; this furnishes a fragrant oil. *M. aquatica* was once in repute as a stomachic and emmenagogue.

M. sativa, Linnæus. — Whorled hairy Mint. Stem erect; leaves stalked, ovate or elliptical, serrate, upper ones similar, but smaller, *all longer than the whorls*; whorls all distant, dense; calyx bell-shaped, *teeth triangular, lanceolate, acuminate*. A herbaceous perennial, very variable in appearance, growing two feet or upwards in height, with fibrous roots, spreading suckers, square stems, and whorled inflorescence. Flowers in August and September. Found in wet places, not unfrequent. There are several varieties distinguished: — *vulgaris* (*M. sativa*, Smith) has the calyx and flower-stalks hairy; *rubra* (*M. rubra*, Smith; *M. sativa*, Sole) has the flower-stalks and lower part of the calyx glabrous, and the stem reddish; *gentilis* (*M. gentilis*, Smith) has the leaves nearly of the same size, stem green, glabrous, flower-stalks and lower part of calyx glabrous, with shorter triangular teeth; *acutifolia* (*M. acutifolia*, Smith) has ovate lanceolate leaves, tapering to each end, and the flower-stalks and calyx hairy all over.

M. arvensis, Linnæus. — Corn Mint. Stem

erect; leaves stalked, ovate or elliptical, serrate, *upper ones similar and equally large*; whorls distant; *calyx bell-shaped*; *teeth triangular, as broad as long*. A herbaceous perennial, growing upwards of a foot high, with fibrous roots, spreading suckers, square stems, smooth, sometimes hairy, and ovate acute leaves, sharply and somewhat unequally serrated; the flowers are in whorls in the axils of the upper leaves, and are produced from June to September; the corolla is pale purplish blue, generally hairy externally. Found in corn fields. There are two forms of this plant distinguished; — *vulgaris* (*M. arvensis*, Smith), which has the leaves narrowed below; *agrestis* (*M. agrestis*, Smith), which has leaves somewhat cordate below, upper ones nearly sessile. This plant is reputed to have the same medical properties as *M. aquatica* and *M. rotundifolia*. The smell of the plant is not very agreeable, and has been compared to that of decayed cheese.

* * Throat of calyx closed with hairs.

M. Pulegium, Linnæus. — Penny-royal. Stem prostrate; leaves stalked, elliptical obtuse, slightly crenate, all similar; whorls all distant, globose, many flowered; calyx tubular hispid. A herbaceous perennial, with trailing



Mentha Pulegium.

rooting stems, and small obtuse leaves, profusely covered with small glandular dots. It forms a dense evergreen tuft, never rising more than a few inches high. The flowers are in distant whorls, large in proportion to the size of the leaves, light purple, nearly white; produced in August and September. It is the smallest of all the British species of mint. Found in wet ditches and similar

places. It is also called *M. exigua*, Linnæus; *M. simplex*, Host; *M. tomentosa*, Smith; *M. tomentella*, Hoffmannsegg; *M. gibraltarica*, Willdenow; *M. pulegioides*, Reichenbach; *Pulegium vulgare*, Miller; *P. tomentellum*, Presl. The properties of the Penny-royal are analogous to those of the other Mints, and it has been supposed to possess specific emmenagogue and anti-spasmodic qualities, as well as being in great esteem as an aperient and deobstruent.

The different species of Mints are difficult of determination, on account of the intermediate forms which they assume: it may, therefore, be useful to add a reference to the standard figures of British plants;—*M. rotundifolia*, English Botany, t. 446; var. *crispa*, Eng. Bot. Supplement, t. 2785. *M. sylvestris*, Eng. Bot. t. 686. *M. viridis*, Eng. Bot. t. 2424. *M. pratensis*, Eng. Bot. t. 449. *M. piperita*, Eng. Bot. t. 687. *M. aquatica*, Eng. Bot. t. 447; var. *citrita*, Eng. Bot. t. 1025. *M. sativa*, var. *vulgaris*, Eng. Bot. t. 448; var. *rubra*, Eng. Bot. t. 1413; var. *gentilis*, Eng. Bot. t. 2118; var. *acutifolia*, Eng. Bot. t. 2415. *M. arvensis*, Eng. Bot. t. 2120; var. *agrestis*, Eng. Bot. t. 2120. *M. Pulegium*, Eng. Bot. t. 1026.

The Mints are of the easiest culture, growing freely in almost any soil. The officinal kinds are usually grown in gardens, among other herbs.

THE GENUS ADONIS.

Character.—*Calyx* of five sepals; *petals*, five to ten, without a nectary; *carpels* not bursting, *without anns*.

A. autumnalis, Linnæus. — Common Pheasant's-eye. Stem branched; leaves triply pinnatifid, with linear segments; calyx glabrous, spreading; petals concave, connivent; carpels reticulated, collected into an ovate head. This is an annual plant, with an erect, branched, leafy stem, one or two feet high, and alternate pinnatifid leaves, very numerous divided into linear, acute, smooth segments. The flowers are solitary, terminating the branches; of a fine, dark, shining crimson, with dark purple anthers. The calyx consists of five submembranous ovate segments. The petals are ovate, heart-shaped, concave, forming a globe-shaped flower; the claw is short, and usually with a dark spot at its base. The carpels are numerous, roundish, reticulated, with a short beak, formed by the persistent style, and collected into an ovate head. Flowers throughout the summer. Found occasionally in corn-fields, but is probably a naturalized, and not an aboriginal plant. It is rather a pretty annual, but not very showy, from its producing many branches and leaves, which are large and rather too numerous in proportion to the flowers.

THE GENUS MYOSURUS.

Character.—*Calyx* of five sepals, prolonged into a spur at the base; *petals* five, with a filiform tubular nectariferous claw; *carpels* not bursting, *closely imbricated upon a long filiform receptacle*.

M. minimus, Linnæus. — Common Mouse-tail. Scape simple, leafless, single-flowered, two to five inches high; leaves erect, linear-spathulate, fleshy; receptacle very long, with numerous oblong carpels. A minute annual plant, remarkable chiefly for the peculiar form of the receptacle, which is at first short, and becomes more or less lengthened; and from its tapering form much resembling the tail of a mouse. The flowers are small and inconspicuous, of a greenish colour. Flowers in May. Found in corn-fields and waste places, chiefly in a damp, gravelly, or chalky soil.

THE GENUS CALTHA.

Character.—*Calyx* of five or more petaloid deciduous sepals; *petals*, none; *capsules* five to ten, many-seeded, compressed, spreading *follicles*. Perennial herbaceous plants, quite smooth.

C. palustris, Linnæus. — Common Marsh Marigold. *Stem ascending*; leaves heart-shaped, roundish, crenated. A herbaceous perennial, with fleshy, somewhat numerous fibrous roots, and thick, round, smooth, hollow, leafy, branching stems, growing from one to two feet high. The leaves are large, roundish, heart-shaped, with large overlapping lobes, quite smooth, and more or less crenated; the upper leaves are smaller, and on much shorter stalks. The flowers are large and showy, consisting of five roundish ovate bright yellow sepals. The capsules are five to ten in number. Flowers in March, April, and May. Found in marshes and wet meadows, and about the margins of ponds, rivers, and brooks. There is a variety found less commonly in more mountainous situations, which is called *minor*. It is smaller in all its parts, and the leaves are considerably shorter in proportion; but the *posterior lobes* are *greatly produced*, which helps to distinguish it from the next; the stem also is single-flowered. In gardens, a double-flowered variety is cultivated, and is a very ornamental sub-aquatic plant.

C. radicans, Forster. — Rooting Marsh Marigold. *Stem creeping*; leaves triangular, somewhat heart-shaped, serrate-crenate. A herbaceous perennial, differing from the small variety of the last in having creeping, instead of ascending stems. The leaves also are different in figure, the *posterior lobes* being *scarcely at all produced*, which gives them a much more triangular form. It flowers rather later than the last, and is found, not very

commonly, by the sides of lakes and rivulets in Scotland.

The *Calthas* are acrid plants, and cattle will not eat them if they can get other food. They are, however, exceedingly showy plants, and from their being unmolested by cattle, they produce a very gay appearance on their native banks. Even the single-flowered state of the plant is worthy of being introduced to the margins of artificial water, where flowering plants are cared for in such situations. Under cultivation, a double-flowered variety has been produced, which is very showy in suitably damp situations. The juice of the flowers, when boiled with alum, is said to form a good yellow dye for paper; and the young flower-buds, properly pickled, make a good substitute for capers.

THE GENUS *TROLLIUS*.

Character.—*Calyx* of five or many petaloid deciduous sepals; *petals* small, linear, flat, clawed, with a nectariferous depression about the claw; *capsules* numerous, sessile, many-seeded *follicles*. Upright herbaceous plant, with *palmate multifid* leaves and *fascicled* roots.

T. europæus, Linnæus.—Mountain Globe Flower. Stem erect; leaves palmately five-parted; segments rhomboid, three-partite, inciso-serrated; sepals ten to fifteen, converging into a globe; petals ten, about as long as the stamen. A herbaceous perennial, growing from one to two feet high, with stout fleshy fibrous roots, and smooth, erect, slightly branched stems. The leaves are numerous, on long stalks, palmate, with oblong, wedge-shaped, deeply-cut segments. The flowers are terminal, solitary, large, globose, of a bright yellow colour. The petals are often concealed by the spreading of the stamens. Flowers in June and July. Found in moist mountain pastures. The Globe-flower is a commonly cultivated and very ornamental border plant, and under cultivation becomes double from the expansion of the stamens into petaloid segments. It is of the easiest culture. Like the Hellebores, this plant is cathartic and diuretic, and possessed of bitter acrid properties, but it is less powerful than the Hellebores.

THE GENUS *HELLEBORUS*.

Character.—*Calyx* of five petaloid persistent sepals; *petals* small, tubular, two-lipped, clawed; *capsules* three to ten, many-seeded, sessile.

H. viridis, Linnæus.—Green Hellebore. Stem few-flowered, leafy; radical *leaves digitate*, stalked; stem-leaves sessile at the ramifications; *calyx spreading*. A herbaceous perennial, with numerous fleshy fibrous roots, and an erect stem, growing a

foot high, forked above. The leaves are large, seldom more than two or three from the base of the stem; the veins are prominent beneath; the leaves of the stem are smaller. The flowers are greenish yellow, some terminal, some axillary. The capsules consist of from three to five ovate, compressed, many-seeded, acutely keeled follicles. Flowers in April and May. Found in woods and thickets, on calcareous soils.

H. foetidus, Linnæus.—Stinking Hellebore. Stem many-flowered, leafy; *leaves pedate* stalked, upper ones gradually becoming ovate bracts; *calyx converging*. A herbaceous perennial, with fleshy fibrous roots, and a smooth branched leafy stem, about two feet high. The leaves are large, evergreen, pedate, on long angular channelled footstalks, with narrow linear lanceolate segments; the upper leaves gradually contract, and the petioles widen, until they become bracts. The flowers are globose, pale green tipped with purple, drooping. The capsules consist of from three to five ovate, compressed, foliaceous follicles. Flowers in March and April. Found in thickets, on a calcareous soil, but usually near houses, so that it may possibly be an introduced plant. The plant grows well in shady places.

The Hellebores are interesting, as being early flowering, hardy border plants, though they are not very showy. *H. foetidus* possesses bitter acrid properties, accompanied by a very unpleasant odour. When used either in a fresh or dried state, it is cathartic and emetic in a violent degree, and in over doses it proves very injurious. As an anthelmintic it has been used with considerable advantage, but in consequence of the violence of its action it has fallen into disuse. One species of Hellebore (*H. niger*) commonly called the Christmas Rose, from its blooming about Christmas time, is a much admired hardy plant, producing white flowers, eventually changing to green. This plant is still sometimes used medicinally as a drastic cathartic, but in consequence of the violence of its action, other less powerful medicines are frequently substituted for it. As a border flower, it well merits the attention it excites.

THE GENUS *AQUILEGIA*.

Character.—*Calyx* of five petaloid deciduous sepals; *petals* five, funnel-shaped, with a horn-like spur; *capsules* three to five, erect, many-seeded *follicles*.

A. vulgaris, Linnæus.—Common Columbine. Stem leafy, many-flowered; leaves biternate, leaflets three-lobed, crenate; spur of the petals incurved at the point; limb obtuse, rather shorter than the stamen. A herbaceous perennial, growing from two to three feet high, with fleshy roots

and leafy stem. The leaves are twice ternate, smooth, or very slightly downy. The flowers are dark purple, pendulous, in a terminal panicle, with ovate oblong petaloid sepals, and tubular petals, which have an unequal dilated mouth, and are two lipped, the outer one being large and flat, the inner very small, and the base prolonged into a tapering spur hooked inwards. The capsules are ovate, oblong and hairy. Flowers in June and July. Found in pastures, woods, and thickets. The Columbine is well known as a handsome border flower, varying, from its single dark purple wild form to various shades of crimson and pink, as well as white; and also assuming a double form, in which latter state they are exceedingly handsome.

THE GENUS DELPHINIUM.

Character.—Calyx of five petaloid deciduous sepals, the upper one elongated at the base into a spur; petals four, the two upper ones with spurs included in the spurred sepal, or all combined into one spurred petal; capsules one, three, or five.

D. Consolida, Linnaeus.—Field Larkspur. Stem erect, branched; leaves deeply multifid; racemes few flowered; spur longer than the calyx; petals combined. A pretty annual plant, the stem of which grows from one to two feet high, and branches in a straggling manner. The flowers are produced in terminal racemes, and are of a vivid and permanent blue. The petals are all united into an irregular cleft hood. The capsule is smooth. Flowers in June and July. Found in sandy or chalky corn fields, but is probably a naturalized plant, and not a true native, as it is not mentioned by Ray, one of our old authors. A variety called *pubescens* has the stem, leaves, and capsules downy. The Larkspur is a very favourite border annual; and in its cultivated state varies into several different colours, as pale blue, red, pale pink, and white; it also exists in a double-flowered state, and in this state is highly ornamental. A tincture of the seed has been recommended in asthma. The leaves and stalks are said to enter into the composition of some cosmetics; which, although efficient at first, are found by continued use to be very destructive to the skin.

THE GENUS ACONITUM.

Character.—Calyx of five petaloid deciduous sepals, upper one helmet shaped; two upper petals, tubular, on long stalks, concealed in the helmet-shaped sepal; capsules three to five; leaves palmate.

A. Napellus, Linnaeus.—Common Wolf's-bane, or Monk's-hood. Leaves deeply five-cleft, cut, with linear segments, furrowed above; flowers racemose; nectaries hori-

zontal, upon curved stalks; spurs bent down; young carpels diverging. A well known herbaceous perennial, growing three or four feet high, with an erect simple stem, furnished with numerous deeply cleft leaves, and terminated by a dense raceme of dark purplish blue flowers of a singular hood-like form.



Aconitum Napellus.

Flowers in June and July. Found on the banks of rivers and brooks in different places, but rarely. It is sometimes called *A. vulgare*.

The Monk's-hood is probably not a truly native plant, but it is now naturalized. It is more common on the Continent. There are numerous varieties of it; De Candolle records about thirty in his *Prodromus*. The plant is a most powerful and dangerous narcotic acrid poison, and its deleterious properties are not confined to any particular part, but are met with all over the plant. The roots are, however, the most virulent, and these have been mistaken by the ignorant for horse-radish, and used as such with serious effects, though they do not possess much resemblance to the roots of that plant. Persons have been killed by eating the leaves; and even the odour of the flowers is reported to have caused swooning fits, and blindness that has lasted for several days. Notwithstanding the dangerous qualities of this plant, it becomes a valuable and useful medicine in experienced hands, and has been found especially useful in nervous affections, gout, and rheumatism. It is very easily cultivated.

THE GENUS ACTÆA.

Character.—Calyx of four petaloid deciduous sepals; petals four, soon falling; carpels one, baccate, indehiscent, many-seeded.

A. spicata, Linnaeus. — Black Bane-berries, or Herb Christopher. Leaves bi- or tri-ternate; leaflets oblong or ovate; deeply cut and serrated; raceme simple, elongated; petals as long as the stamens, berries oval. A herbaceous perennial, with short, creeping, underground stems. The above-ground stems are erect, from one to two feet high, scarcely branched, and leafy. The flowers are in a dense, terminal, oblong simple raceme, consisting of four oblong white petals. The fruit is an oval, purplish-black juicy berry. Flowers in May and June. Found in mountainous limestone tracts in the north. The berries of the plant are said to possess expectorant and antispasmodic qualities; they have, as well as the whole plant, a fetid nauseous odour, and have the general reputation of being poisonous.

THE LOMBARDY POPLAR.

A BEAUTIFUL and lofty growing tree, soon attaining to maturity, and consequently much prized wherever shelter is required. This trait in its character recommends it also to all who are anxious for immediate effect, by raising around their residences that venerable air which hard-wooded trees are so slow in producing. It grows in its greatest beauty when planted in rich damp soil, near to running streams; but it will grow tolerably on any soil, though in exposed and dry situations its leaves soon become unsightly, and fall off. On the plains of Persia, its native country, travellers represent it as reaching a noble altitude, and conferring dignity on situations which are in themselves of common-place character. It is a tree, in short, which is interesting both to the eye and ear. For my part, I think it is delightful to hear it awakening itself to the slightest breeze that may be abroad in summer-time, relieving the scene from that checked and lifeless-like appearance which it would otherwise have during still weather. Gilpin argues otherwise, and says, that "when the gentle breeze, pressing upon the quivering poplar, bends it only in easy motion, while a serene sky indicates the heavens to be at peace, there is nothing to act in concert with the motion of the tree; it seems to have taken its form from the influence of a sea air, or some other malign impression; and, contracting an unnatural appearance, disgusts."

Several other writers express an unfavourable opinion of this tree. Cobbett considers it "a great ugly tree;" Sang coincides in this opinion; and in Prince Pückler Muskau's estimation, it is "too fluttering." It is not unlikely that some of the objections to this tree, as a landscape ornament, apply to the injudicious mode in which it is so often planted.

In its growth, the Lombardy poplar preserves a great uniformity of character, and consequently it is apt to offend wherever a continued repetition takes place. As a landscape ornament, however, this tree, in itself, is one of the most interesting and useful sylvan objects suited to the climate of Britain. Contrasted with the generality of trees, which are round-headed, it has that admirable effect which we almost invariably find copied in paintings of rural and sylvan scenes; and it may be safely asserted that no other tree performs the same office when grouped with buildings. At the same time, it is to be observed, that in many parts of England, and especially around the metropolis, it has been allowed to remain in too great profusion. The fact seems to be that, being a fast-growing tree, it is eagerly sought by all who wish immediate shelter to their residences; and after having attained to maturity, it is with the greatest reluctance any proprietor thinks of felling it.

One of the most pleasing traits connected with the poplar is its fitness to be planted in towns and cities. It occupies little space; obstructs not the light; has little or no dropping of water from its branches during wet weather; raises a rustling noise overhead, proclaiming the coming storm; is a resort for singing-birds; and is generally esteemed as exhibiting, close to our windows, the changeful picture of the seasons. How is it, then, that such a dearth of verdure should prevail in so many towns? Though this question must be left to be decided by others, it must be confessed that it would be interesting to find out the cause which leads the inhabitants of a certain town, as with one consent, to ornament their dwellings with trees and shrubs; whilst the populace of another seem to delight in the bare and burnt-up appearance of bricks. A journey over England affords many a striking contrast in this respect. Birmingham, for instance, may be pronounced to be without trees; whilst Lichfield, not far distant, is crowned with verdure. In the east of England it is the same: Norwich seems to have been built in a garden or arboretum; whilst Lynn, a town which Nature has done much for, appears to be in this respect far behind the age, for it has no trees waving high over its buildings.

Though evergreens, on account of their dense and sombre aspect, will always be preferred for churchyard ornaments, yet there is no reason why the poplar should not be introduced, if sparingly planted, in our cemeteries; more especially until others, better suited, attain to a proper size. In short, wherever other trees are planted, the poplar is required to correct the monotonous expression of ro-

tundity observable in the oak, elm, beech, chestnut, and others ; for no other deciduous tree has the same habit.

As a park ornament it has its uses ; but, as Loudon has well observed, it is a dangerous tree in the hands of those who have not well studied the art of landscape composition.

The propagation of this tree is so simple, and so generally known, that it is unnecessary to dwell upon this point. It will grow almost anywhere, either by cuttings, layers, suckers, or seeds, and has the advantage over many others in suffering but little from being transplanted when of a large size.

ROTATION CROPS FOR ALLOTMENTS.

BY JAMES GRIGOR.

THE most usual way in which allotments are disposed is as under ; the crops returning in rotation every seven years. Thus, the first division, now in wheat, barley, or oats, is followed by clover ; then by potatoes, taken off early enough to be followed by another crop in the same year, generally white turnips or

rape ; and so on, until No. 7 is reached, which will, of course, be succeeded by barley, &c. as before. It is to be understood that the crops extend from side to side of the field-table, the road being in the middle, so as to afford easy access with manure both to the right and left hand :—

Wheat, Barley, or Oats,	laid down with Clover.
Clover	for stall-feeding.
Potatoes, followed, in August,	by Turnips or Rape.
Late	Potatoes.
Tares cut in spring, and	followed by Turnips.
Late or	Winter Potatoes.
Turnips.	Turnips.
Carrots,	Cabbages, &c.

In very small allotments, the usual mode is to have one moiety in wheat, and the other in green crops, such as potatoes, cabbages, peas, beans, turnips, carrots, mangold-wurtzel, &c., changing the crops every year.

Wheat, sow from 20th October till November 16, dibbled or in drills : if in drills, let them be 6 inches apart, and 2½ inches deep. In dibbling, steep your seed in urine, and use plenty of rape-dust to make it part. The rows 6 inches apart, and 6 inches distant, and 3 inches deep, 3 seeds in each hole, or as near to 3 as possible. If dibbled, one bushel per acre.

Oats, sow March 15, in drills 6 inches apart ; 3 bushels of common manure to a rod.

Barley, sow April 15, at the rate of 2 bushels per acre.

Beans, sow February 10, in rows 18 inches apart, and 3 inches asunder, covering them 3 inches deep.

Peas, which should follow corn-crops, 15th February, in drills, 8 or 9 inches apart, 1 bushel to ¼ acre.

Turnips, a few in May, and throughout June and July, ¼ lb. to ¼ acre.

Carrots, 16th March, in drills 12 inches apart. Give no manure, but let them follow a crop which had been richly manured. Ground dug two spits deep is the fittest for them. Seed, 4 lbs. per acre.

Mangold-Wurtzel, in rows 2 feet apart, and 1 foot distant in the rows. A good plan is to dibble the seeds, dropping 3 or 4 seeds in one hole. May 6th is the time.

Potatoes, any time in November, 12 inches deep, the lines about 3 feet apart. Short-growing, early sorts, may be put in lines 2 feet apart.

Cabbage, sow in beds August 1, and plant them out in November.

Rye, for green food, sow 25th September, 24 gallons liquid manure to 1 rod, previous to digging the ground. In drills 5 inches apart, using $2\frac{1}{2}$ bushels per acre.

Tares, September 18, in drills, $2\frac{1}{2}$ bushels per acre; or broadcast, 4 bushels per acre.

Any directions as to the quantity of manure to be used, without knowing what such manure is composed of, must be fallacious. Five cwt. of the following mixture applied to an imperial acre has been recommended by the most eminent agriculturists in this country:—

	s.	d.
78½ lbs. bone-dust, at 2s. 6d. per bushel	4	4½
25 " sulphate of ammonia	3	9
1½ " pearl-ash	0	2½
25 " common salt	0	6
2½ " dry sulphate of soda	0	2½
132½ " at a cost of	9	0½

Planting Hedges.—The best time for planting Whitethorn hedges is immediately after the fall of the leaf in autumn; for at that juncture a tree is at complete rest, and has not commenced to prepare the necessary secretion for its support during the following spring and summer. The latter part of October, and the commencement of November, then, is the season when those plants should be removed. September and October are the months in which hedges should be trimmed; and if it should be necessary to dig about their roots in order to add manure, this work should be also performed in November. If a hedge should not require manuring, the hoe only should be used in cleaning.

HOTHOUSE AND GREENHOUSE ARCHITECTURE.

(See *Frontispiece*.)

THERE is much yet remains to be realized in the erection of houses for the cultivation of plants, not only as regards their number and dimensions, but also in their arrangements and details. Look where we may, we seldom see more than the same kind of flat lean-to or span roofs, the same kind of formal stages when the plants are grown in pots, and the same kind of formal beds when the latter are planted out in borders of prepared soil. Even refinements or elegancies of construction fail to invest such buildings with any character of distinctness or novelty, owing to the sameness or monotony which forms the basis of the design. So very generally is this the case, that one can form a tolerably good idea beforehand of nine-tenths of the buildings which exist. As far as relates to the exterior, some improvement in this respect has resulted from the partial adoption of what is called the ridge-and-furrow style of roof; this consists of a series of small spans placed side by

side, so as to cover the area; and they admit of being so arranged as to produce a very ornamental effect. This style, too, forms the basis of the plan which promises to subvert the monotonous interior arrangements already referred to, inasmuch as when applied on a grand scale, it facilitates the covering of larger areas of ground, in which the absolute necessity of departing from long-cherished arrangements must eventually lead to great improvements in this respect. But even as now generally applied, this style of building leaves the interior unchanged, for the same mode of disposing of the plants is in most cases followed.

This ought not to be. Gardens would lose half their charms were we to see the same thing imaged everywhere: it is, in fact, in the endless variety in connexion with intrinsic beauty, of which they admit, that their fascinations rest. And why should it not be so with horticultural erections for the growth of exotic vegetation? Why should these, which are to a certain extent invested with the additional charm of rarity, be deprived of the charm of variety? Why should we not have groves, and lakes, and flower gardens, and rocks, and caverns, with their appropriate vegetation, within as well as without? In the former case their beauties would be available either for admiration or study at all seasons; in the latter, the fickleness of our climate often acts as a preventive to both these exercises.

We are not without experience of arrangements such as those which are here proposed for more general adoption. The conservatory in the garden of the Royal Botanic Society in the Regent's Park, which covers at present an area of about one hundred and seventy-five feet by seventy-five feet, and which is only a small portion of the contemplated design, is laid out in this informal manner, with groups of allied plants that will eventually give it something the character of a natural grove. The complete design of this fine building embraces also an artificial lake for the growth of tropical aquatics, and provides for the disposal of the surface in a picturesque and undulating manner. Another instance occurs at The Holme, Regent's Park, the residence of J. Anderson, Esq., where is a rock house for Orchids and Ferns, of which the frontispiece of the present volume is a representation. This, though on a small scale, is a fairy scene, and attests the taste with which the proprietor patronizes the delightful science of horticulture. Here there is no similarity to be traced with the erections which are usually seen; and on entering it the eye is at once relieved from that monotony which is, as we have already remarked, so generally apparent as to become wearisome,

despite the fair forms by which it is surrounded. There are no classes of plants, perhaps, with which a more marked effect could have been produced, than those which are here selected; the one group growing naturally for the most part on the trunks of trees, or attached to rugged stones; the other clothing the cavernous recesses of the rocks with the tenderest and most graceful of vegetable drapery. We believe the designing and erection of this novel Orchid house is to be attributed to Mr. Marnock, the curator of the Royal Botanic Society. Our more immediate object is briefly to describe this building.

To proceed:—The general outline of the building is that of a square; the area, however, is larger than this would indicate, on account of some cavern-like recesses which are formed in the side walls, on one side especially. On the one hand the building is connected with a greenhouse, which forms part of the same erection, and does not differ from those commonly seen, except in being of light and elegant construction. On the other side it is connected with a massive piece of rock-work, forming part of an amphitheatre, where the wildness and rudeness of nature is successfully imitated,—on a small scale, though much beyond what is usually seen. The rock-work here referred to forms the entrance to a cavernous rocky passage, by which the Orchid house is reached. The first glance of the interior, obtained through a doorway of coloured glass which connects it with this cavern, is very striking and beautiful. The walls are entirely rugged and irregular, and are formed of vitrified brick and cement, built up so as to represent natural rock: on the projecting parts of these rugged walls, and also in little hollow places formed for their reception, the plants are fixed; ferns being chiefly placed in these positions. In the centre is a group of rock-work, forming an irregular arch over a pool of water; this rock-work is covered with plants much in the same way as the walls. The pool of water referred to is continued beneath the pathway on one side, and carried onwards into one of the deepest recesses. Gold fish, as well as aquatic plants, are introduced into the water. The pathway—or at least the space left for walking—is as informal as the walls, rising and falling in connexion with the adjoining rock-work. Beneath this floor are laid the hot-water pipes for supplying heat; these are laid in a water-tight channel, and immediately over them are numerous “chinks and crevices,” by which not only heat is admitted, but moisture also, in the form of vapour, when the pipes are flooded. The roof, which is plain and simple, and fixed at a low angle, is formed of large panes of the British sheet glass. The Orchids are partly grown in baskets and on

blocks, suspended from the roof, and partly in pots placed about on the rock-work.

We affect not to state that this building is faultless; but we may observe that Mr. Anderson has here provided what in principle, at least, is worthy of imitation.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE
AND NATURAL HISTORY.

AUTHORITIES.—*Journal of Horticultural Society*, JI. H.S.—*Gardener's Gazette*, G. G.—*Gardener's Chronicle*, G. C.—*Gardener's Journal*, G. J.—Quotations from which are duly acknowledged by the respective initials attached to each.

SUMMER STOCKS.—A very intelligent English gardener, residing at Hamburgh, observes that his experience indicates several points in the culture of these flowers which do not receive proper attention. He says:—“The first sowing may be made any time in March, to suit circumstances; and when they come up, keep a watchful eye that the first sprung seeds do not damp off. This I take to be a particular point in securing the greatest quantity of double flowers. When the least appearance of damp appears, they should be immediately transplanted; but if not, the sooner this is performed the better. The following plan I have adopted with success:—I fill a frame with soil, and make small holes all over, about two inches in diameter; I fill these with moss, placing the plants in the centre of the moss. By the time for planting out, the moss will be matted with roots, and the ball of moss can be removed to where they are intended to flower, without the plants receiving the least check. This mode is preferable to using small pots, because the roots generally make to the sides of the pots, and, when turned out, are more or less injured: besides, it is of some advantage to be able to dispense with pots. No plant is more susceptible of a check in any way than the Stock; and I think it has less chance of receiving it when moss is used than if potted, for there is not the risk of its getting pot-bound, or the roots being injured in turning out. If they are to be well grown, they must receive no check from the time of sowing, until they are placed where they are to flower. And, as before mentioned, particular care should be taken in securing those plants that come first up, for I have proved that they produce the greatest quantity of double flowers. The soil for them should be of medium texture, neither too light nor very heavy, and should be well enriched with dung; in fact, they will bear almost any quantity of rotten hot-bed dung. Ten-weeks Stocks, sown after the first of May, never grow and flower fine; they are always stunted.”—G. J.

ECONOMICAL HEATING.—The following is a detail of a very simple mode of supplying heat to a pine-pit, which might be adopted without difficulty in many other places:—

Some years ago a pit was erected here for growing pines, but as the proprietor was afraid of the expense of fire, it was determined that the front and end walls should be pigeon-holed three feet below the ground level, and a trench provided, to be filled with dung, the heat of which was to come into a six-inch flue, to afford the principal supply of heat, with a fire-flue at the back to make up any deficiency in very cold weather. The result was that plenty of heat was produced, and good fruit grown, but at an enormous expense of labour in renewing the dung, and waste of fuel; as the flue having a rapid draught and speedy termination, as much heat escaped up the chimney as would have been more than sufficient to have heated the structure (without any dung), if properly applied. Being anxious to remedy this without incurring much expense, I resolved upon taking down the fire-flue at the back, and the dung-heat flues at the front and end, and to have no flue whatever inside the pit, by which means I should be able to place the back row of pines where the fire-flue was formerly placed, and each row following would at last bring the front row out of the shade of the front wall, and consequently they would receive the rays of the sun the same as the others. By this arrangement, the space before occupied with the back flue, with the additional space of the dung-heat flue in front, would afford plenty of room to walk along, the height being about six feet. It was necessary to build a nine-inch wall, to form the pit to hold the tan, along the front of which, between the pines, there would be ample room for propa-

gating many things which would otherwise require an additional hot-bed. The inside being thus completed, the flue was built along the trench, outside the pit formerly occupied by the dung, which was completed with the same bricks, and as many extra new tiles for the bottom and top of the flue as the two ends required. The furnace was also fixed in the same trench, with holes by the side for the admission of cold air into the chamber, as occasion might require, the tiles on which the flue was built, resting on one brick in thickness, in order that no heat might be buried; the width and height of the trench affording plenty of room at the sides and top of the flue for the hot air to circulate. On the top of the wall surrounding the flue, and resting in the top row of pigeon-holes in the front wall of the pit, were placed strong iron rods, to be covered with slates, to form the top to the air chamber. On these was laid about six inches of soil, to prevent the escape of heat, which acquired sufficient warmth for the growth and propagation of a variety of plants under hand-glasses, which would not succeed without artificial heat. I had imagined that it would be necessary to provide means to procure moist heat, but it was not so; for the flue being in such a damp situation, as kindly a moist heat was produced as could be desired. Over the furnace I had a cistern placed, to receive the water from the roof, thereby securing at all times a supply of warm water, which is no small advantage. This has been done at a very trifling expense, and has proved advantageous in many ways; for we now obtain a better supply of heat than we formerly did with the assistance of the dung, and we consume less fuel.

G. J.





